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AESTHETICS OF CONCRETE
BY AYMAR EMBURY II

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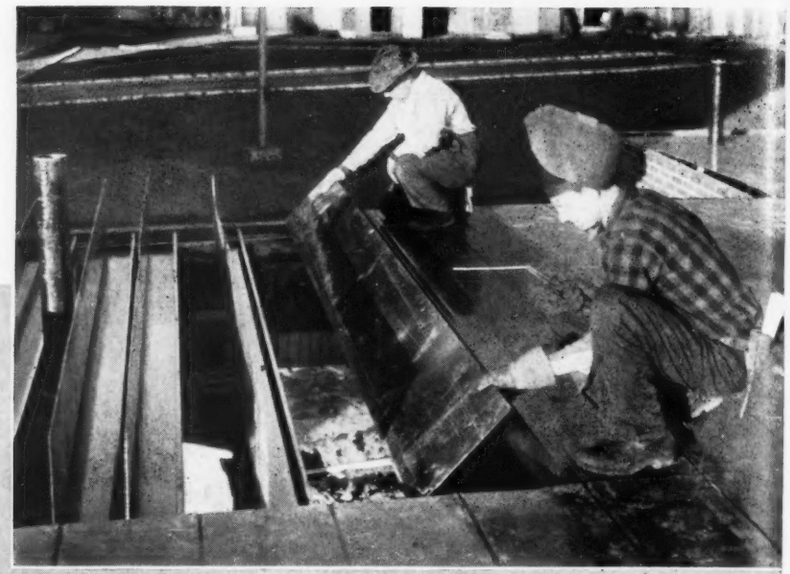

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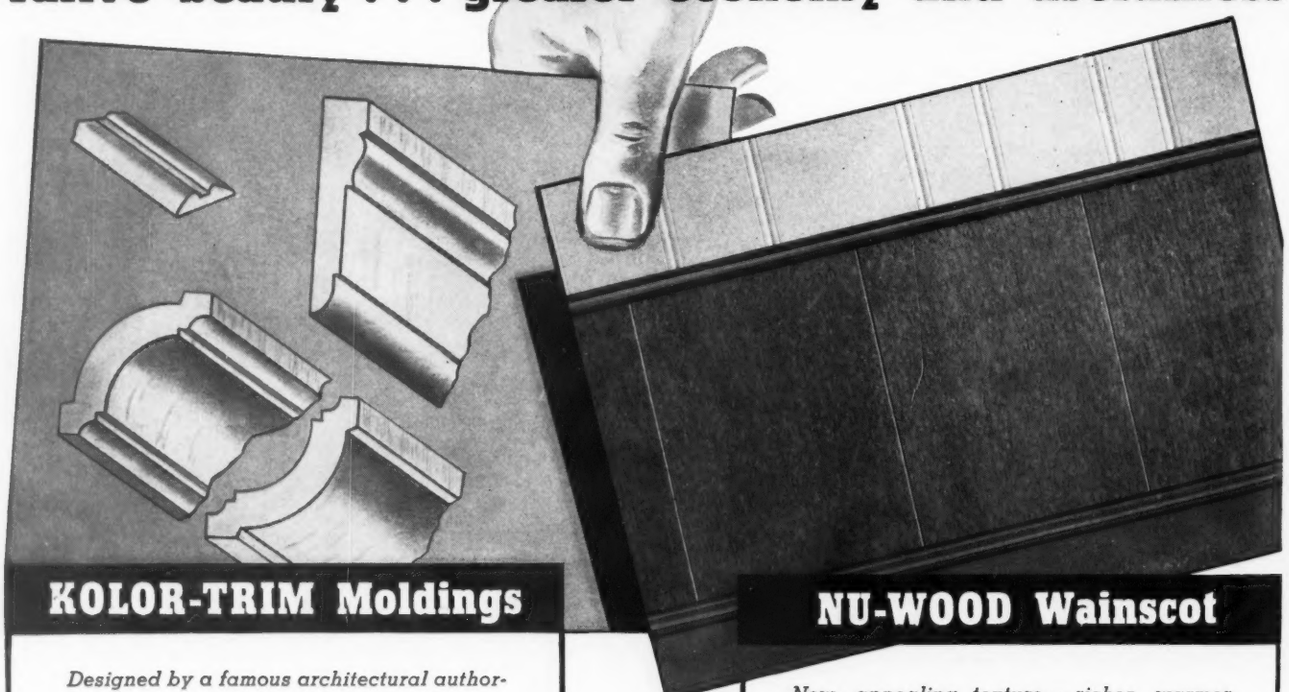

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AESTHETICS OF CONCRETE

BY AYMAR EMBURY, II

EDITOR'S NOTE: *This article is the second in a group of discussions by Mr. Embury of the æsthetic phases of designs involving collaboration between engineers and architects. The first of the series appeared in the February issue and dealt principally with bridge anchorages. Another installment, devoted to steel bridges, will appear in an early issue. Since these discussions are of interest to both professions involved, they are being published also in the magazine "Civil Engineering." The author is particularly well qualified to write on this subject since he has been associated on many important bridge projects with leading American engineers.*

THE use of a new material is almost certain to follow the precedent set by the old materials which are nearest to it. For example, the new floor coverings like linoleum or rubber were designed to simulate marble or tile with masonry joints, but gradually, as the inherent qualities of the material have become apparent, a change in the surface design has been taking place. Materials become used for what they are, and not as imitations of those they replace, just as any new machine tends to develop from an initial form like that which it replaces. For example, the original automobiles were very properly called "Horseless Buggies" and while it is probable that the evolution of the design of the automobile is not yet complete, it has certainly gotten very far away from the form on which it was originally based.

Concrete is, in a sense, a new material and where the æsthetic effect of structures composed of it were considered at all, in the earlier structures the designers tended to imitate the familiar stone masonry structures, or even in some cases steel forms, and this tendency persisted until the very nature of the material required forms which could not be readily obtained by imitation of traditional ones. There are several things about the æsthetic use of concrete which are, so to speak, subcutaneously appreciated by the people who have to use it, but which are not generally thought about in any clear cut and distinct way.

To begin with, the thing we all know and rarely admit is that concrete is used in many types of structures because it is cheaper than other forms of masonry, and in consequence, the decorative treatment of concrete surfaces is usually reduced to a minimum because the expense of elaborate decorative treatment would defeat the very reason for its use.

In the second place, concrete is not a brittle material like stone nor a ductile material like steel, but is a plastic material, so that any decoration in concrete is not hammered out with a chisel or drawn through a die, but is cast in place. This naturally affects the character of the ornament, since it is very much easier to incise the design by the application of projecting pieces on the form, than it is to cast projections from the general surface by recesses in the forms. In fact, it is not only difficult to cast projecting ornament on a vertical surface and have it come out of the form with any sharpness and clarity, but it is almost impossible to cast projecting ornament of any complication in a vertical form where concrete is being poured in big lifts and in a commercial fashion.

The third factor in the use of concrete which troubles the engineers quite as much as the architect, is the difficulty of procuring a uniform surface to begin with and of preserving it even if it is procured. In engineering structures especially, the surfaces are so great that irregularities of texture, especially at pour joints, are almost impossible to prevent. Very often sand spots or voids due to excess latex are so prominent that they distract the eye from the ornamental features and neutralize the effect of the latter. Nor can these voids be concealed by filling them or plastering them with cement mortar even if the whole surface be rubbed.

The fourth feature which differentiates concrete from other masonry materials is the fact that not only are expansion joints necessary at much more frequent intervals than in stone masonry but they are much more prominent because of the smoother surface and

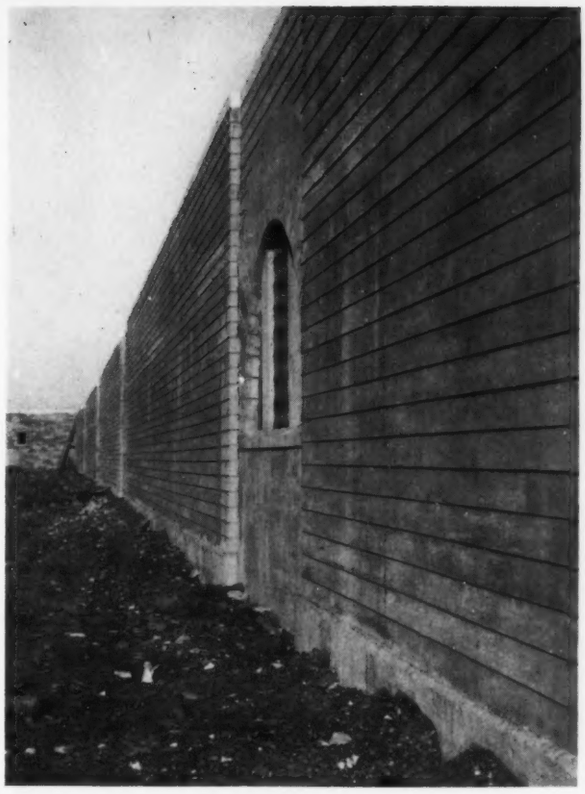
greater uniformity of color in the mass; any decorative treatment of the surface must therefore take the expansion joints into account almost as a governing factor.

The fifth, and by no means the least important element in the decorative treatment of the concrete, is the form. There has been no form developed which will not show (at least to some extent) form marks on the concrete, and since no practicable method has been devised to use forms without stay wires or bolts piercing through the wall, the locations of these stay wires are very plainly marked by the patches necessary after their removal. All these factors are pretty generally recognized and almost as generally ignored. As Mark Twain once remarked, "Every one complains about the weather, but no one ever does anything about it."

In view of the foregoing, it seems worth while to discuss the kind of surface which can be obtained in commercially erected concrete before thinking about what to do with the surface after we get it. Perhaps the simplest and most effective way of obtaining a uniform surface is to bush-hammer it. This does produce a uniform surface in which discolorations are only slightly apparent, it removes all form marks and hides substantially all patches. It is not by any means a new treatment and was used in very large surfaces and in a very effective way by Mr. Henry Hornbostel when he worked on the Hell Gate Bridge and approaches in association with Mr. Gustav Lindenthal thirty years ago. It is not, however, a panacea. In the first place the whole conception of the design may be such that a smooth surface is desired; in the second, it is exceedingly difficult to bush-hammer moldings, recesses, or breaks without destroying the arrises; and last, it is expensive, although concrete so treated is much less costly than stone surfacing. The second method is to rub the entire surface. If some day a machine is devised whereby large areas can be economically treated, this may become the accepted method, but no such machine is as yet in common use and to rub by hand a large amount of concrete as, for example, the twenty miles of walls on the Triborough Bridge, is not only very expensive but the results are by no means of uniform merit. The third method of obtaining a reasonably satisfactory surface is to accept form marks and the marks of stay wires as an inherent quality of concrete and to design the structure so that these marks enhance the general effect rather than detract from it. As one engineer remarks, the way to design a concrete wall is to design the form work, and this was actually done by collaboration with Frederick Snare Company, contractors, for this work on the piers for the Marine Parkway Bridge, and in a rather different way by Mr. Clinton Loyd, the architectural designer for the Bronx Parkway Commission, in the approaches for the Croton Lake Arch Bridge. It is said also that much of the good concrete work in California has been based on this principle.

A view of the Croton Lake Bridge on the Bronx Parkway Extension, New York, a close-up of the concrete portal of which appears as the frontispiece to this article

The kind of form will, of course, very much affect the appearance of the surface. Before selecting the type, therefore, the distance from which the structure will most usually be seen must be considered. The usual plank form shows practically every joint, both horizontal and vertical, as well as reproducing in concrete the graining of the wood itself. This may not produce the desired effect if the structure is to be seen from near at hand, although variety in the surface pretty effectually disguises the marks of stay wires; but conversely, it is an admirable surface as seen from a distance, since these comparatively small variations are of little importance. Mr. Loyd has designed several structures in which the wood planking of the forms is laid not flush but overlapping, so that when the forms are removed, the concrete has somewhat the effect of a clapboarded house, not at all un-



Retaining wall of West Side Improvement, New York. Designed by Clinton F. Loyd, Architect, of the organization of Madigan-Hyland, Engineers. Note "clapboarding" effect obtained by overlapping the form planks

pleasant on close inspection and not apparent from a distance, a very ingenious method of using forms and exceedingly simple to erect in large unbroken surfaces. Where columns or piers are used in conjunction with these surfaces, the result is not quite so happy, and if some other treatment is adopted for these smaller surfaces, there may be a curious and perhaps unpleasant contrast between the two.

The use of pressed wood, masonite, or other forms in large sheets gives a certain texture to a wall, reminiscent of ashlar masonry. If the form work is carefully done, the joints between the several sheets are only faintly outlined but the mark of every stay is plainly visible and the junctions between several pourings are exceedingly prominent unless the pours are stopped at exactly the levels of the joints. Even there, honeycomb is likely to appear near the tops of the uppermost sheets. However, if the lining sheets of the forms are logically and regularly disposed and not in a haphazard and patchwork fashion, and if the location of the stay wires is carefully related to the shapes of the sheets, the effect may be interesting rather than the reverse. The usual sheet being 4′ x 8′, the usual number of stays would be six. If these are evenly spaced and kept at a uniform height above and below the edges of the sheets, the spots resulting from the patching over the stay wires may be made to form an interesting pattern on the surface instead of looking like a skin disease.

Small surfaces can, of course, be patched and rubbed so as to present substantially no irregularities, although surface checking may occur, but the idea of patching and rubbing large concrete surfaces to eliminate defects is a false one. The patches are never of exactly the same consistency as the original concrete, do not dry out the same color, and when damp absorb moisture in a different degree from that of the balance of the wall. Rubbing is a palliative but not a cure.

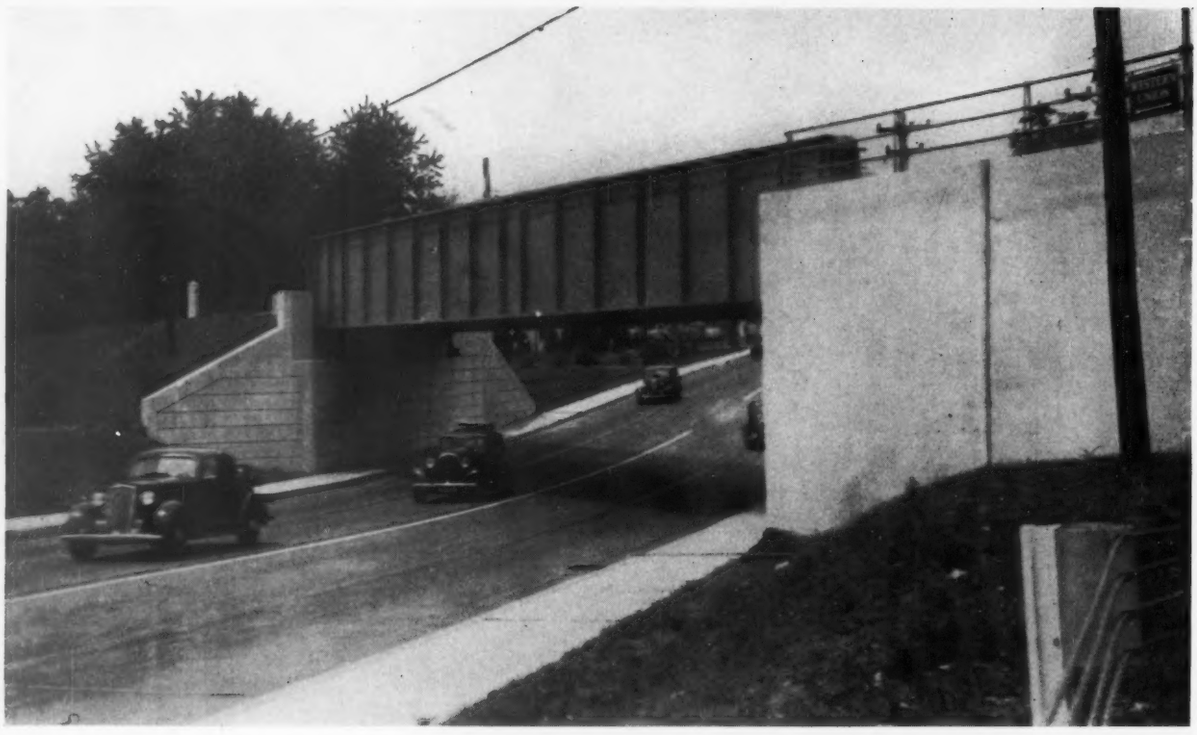
As before stated, these difficulties of surface treatment are generally known but are usually ignored except where the surfaces are so small that a careful and expensive treatment is possible. Mr. Early of Washington has treated concrete very successfully in a rather unusual manner by making a sort of mosaic of the surface through the combination of different mixes and different pigments and, after the concrete is set, washing the surface or bush-hammering it. But his method, admirable for small architectural motives, is not readily applicable to larger surfaces and especially to concrete structures where low cost is an essential. Most such structures have usually been designed by engineers who think of it primarily, or even solely, from the structural point of view without even exercising much care to get a surface free from stains, patches, and honeycomb. On the other hand, where architects have designed such surfaces they have been only too apt to attempt to reproduce stone forms in cast material.

Big engineering structures of concrete cannot be so treated. The units are too great, the expansion joints important, and the material plastic. To discuss, first, small examples—we have illustrated two highly decorative small bridges designed by Mogens Ipsen, Engineer, and Reyner A. Eastman, Architect, the Krape Park Bridge in Freeport, Illinois, and a bridge on the estate of Mr. Robert Gaylord of Rockford, Illinois. These are almost perfect examples of good concrete design, obviously economical of material, and while there are no very large surfaces which require a highly specialized surface treatment, the designs fulfill the first æsthetic requisite, in that concrete is treated as concrete—a plastic material of great strength—with forms that are natural to it. The small size of the bridges has enabled the designer to avoid certain difficulties which would have arisen in larger structures.

Two highly decorative small concrete bridges—the Krape Park Bridge (above) at Freeport, Illinois, designed by Mogens Ipsen, Engineer, and Reyner A. Eastman, Architect, and (below) a bridge at the Robert Gaylord Estate, Rockford, Illinois, by the same pair of collaborators

Richard Averill Smith

271 PIERS UNDER ROADWAY, TRIBOROUGH BRIDGE, NEW YORK



An excellent example of a small concrete structure is this underpass at Smithtown on the Long Island (New York) Railroad, designed by A. C. Watson, Chief Engineer for the Railroad

There are no single surfaces of any great extent and no expansion joints are necessary: each is a unit.

Of somewhat similar character are the concrete piers supporting the viaduct of the Triborough Bridge. These are monolithic pieces of concrete, the piers cast in lifts of about 9′-0″ and the arch between the piers cast with the upper portion of the piers. It was recognized that at the pour joints there would inevitably be some change in surface or perhaps an irregular line between the portions cast at different times. In order to hide this, rather deep V-joints were placed at the levels at which pour joints would naturally occur. There was very little rubbing or patching done on these piers and the results have been satisfactory. The fluted upper member forming a sort of cap of the piers and arches was added later to conceal the seats of the girders; the fluted form was adopted partially because the designer liked such treatment and partially because it was inevitable that a different color and surface would result where a narrow band was cast at a different time from the rest of the structure. It might be said that these arches, which appear to be æsthetically satisfactory both free standing and when they carry the structure above, have almost exactly the forms which are required for stability. It is true that the batter of these piers was not essential and that a square plan might have been more economical of form work although requiring more concrete, but in general these piers follow the dictum that the form required for structural reasons will almost certainly give a satisfactory æsthetic result.

Another excellent example of a small concrete structure is the underpass at Smithtown where the Long Island Railroad crosses Route 27. The bridge itself is of steel but the abutments and retaining walls are of concrete admirably treated with both vertical and horizontal recessed lines to conceal the expansion joints and pour joints. It is a very simple, straightforward, and satisfactory piece of architecture, done without an architect.

The examples illustrated thus far form a sort of intermediate link between the very small structure and the larger one. It is obvious that the bigger the area, the more difficult the treatment of the surface, because concrete seems to demand large unbroken surfaces and not a succession of small units. The north abutment of the Marine Parkway Bridge is a fairly good example of what seems to be a successful treatment of unbroken surfaces. The concrete in this case was rubbed; the only decoration was vertical flutes, two of which were expansion joints, and the black granite caps of the end piers. The introduction of a vertical joint in the center of the arch has

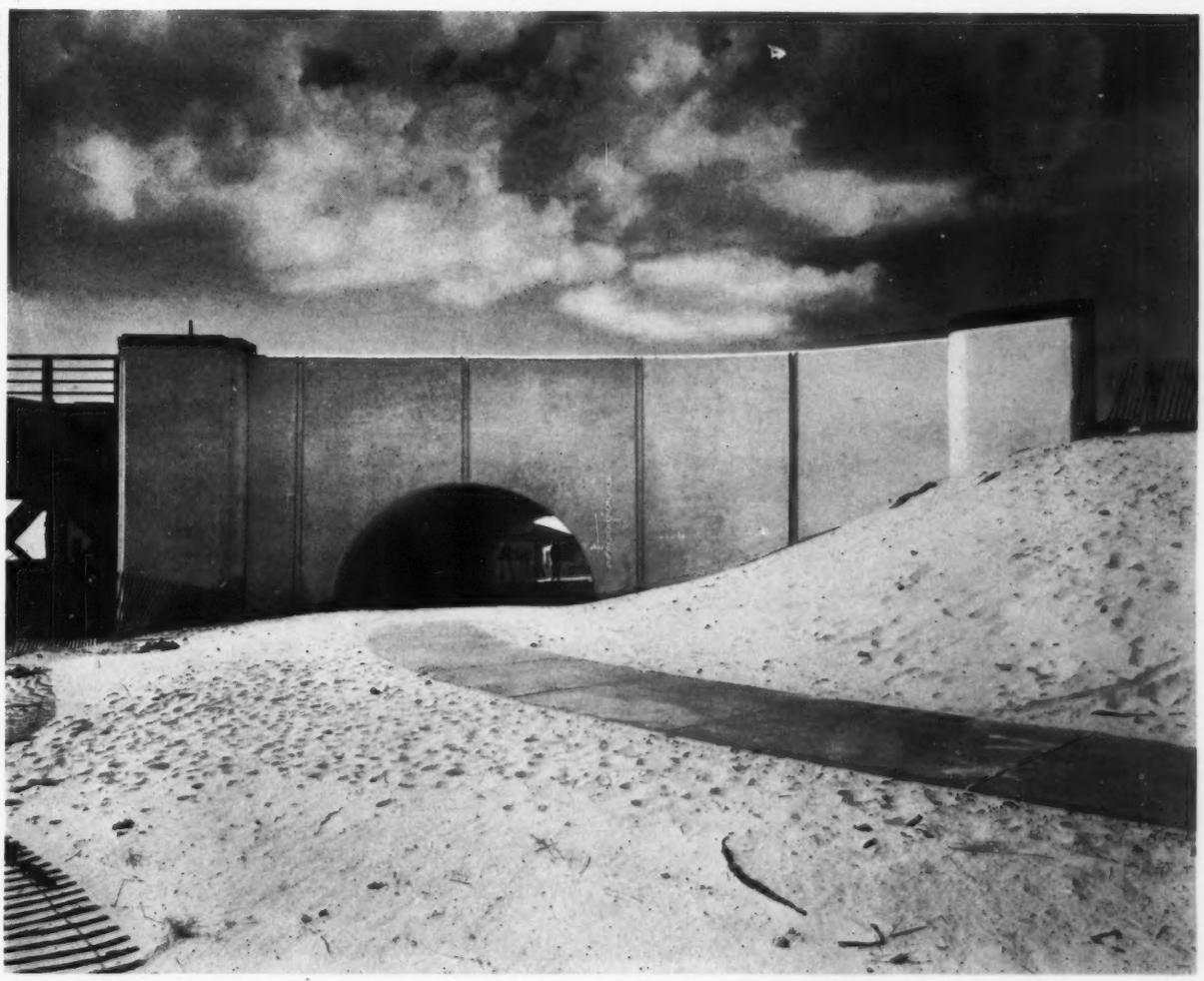
been criticised, perhaps justly, but to the designer at least it seems a better expression of concrete than would any radiating joints suggesting stone voussoirs.

The piers supporting the lift span are perfectly plain unbroken surfaces, each poured in one operation within forms which are composed of masonite or plywood in units of about 4′-0″ x 8′-0″ and laid out in a uniform pattern. The construction engineers, The Frederick F. Snare Company, cooperated with the architect not only in the making of drawings of the form work showing the layout, but also in seeing that the work in execution followed the drawings. They state that little or no extra cost to them was involved. While in the illustration the marks of the forms were only slightly apparent, in some lights they are very distinct, but instead of detracting from the æsthetic interest of the pier, they increase it.

The retaining walls of the Triborough Bridge offered a real problem. There are a good many thousand feet of these walls, the heights varying from a few inches to 60′-0″. Since all of these walls were either in parks or faced parkways, the problem was to design a structure of some æsthetic interest, but which was a strictly commercial wall. Expansion joints at intervals varying between 60′-0″ and 40′-0″, and a parapet wall, cast separately, were required along most of the length. It was determined, therefore, to break up the wall into vertical panels of approximately 8′-0″ in length (this being the standard length of form lining) and to cast the lower part of the wall in one pour if possible to the height of the parapet, stepping back at this point to disguise the bad line of pour joints. The execution naturally varied depending upon weather conditions, the desire of the several contractors to produce good surfaces, and the varying necessities for haste in different portions of the structure—but in general the effect is interesting and the rhythm of these V-joints, carried from one end of the bridge

The north abutment of the Marine Parkway Bridge, Long Island, New York, designed by Robinson & Steinman, Engineers and Aymar Embury II, Architect

Richard Averill Smith



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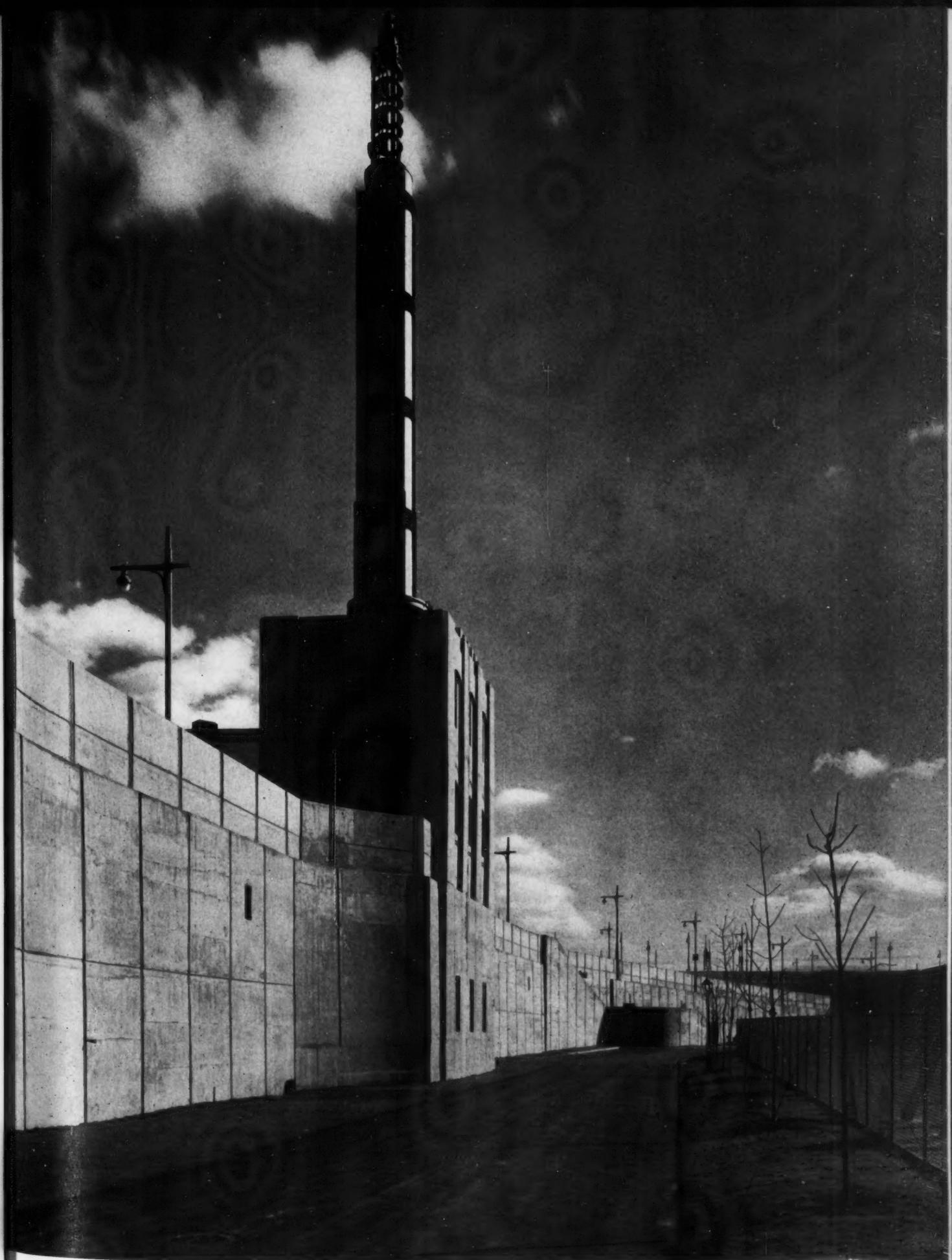
The piers supporting the Marine Parkway Bridge have perfectly plain unbroken surfaces. Waddell & Hardesty were the Engineers, with Aymar Embury II as Architect



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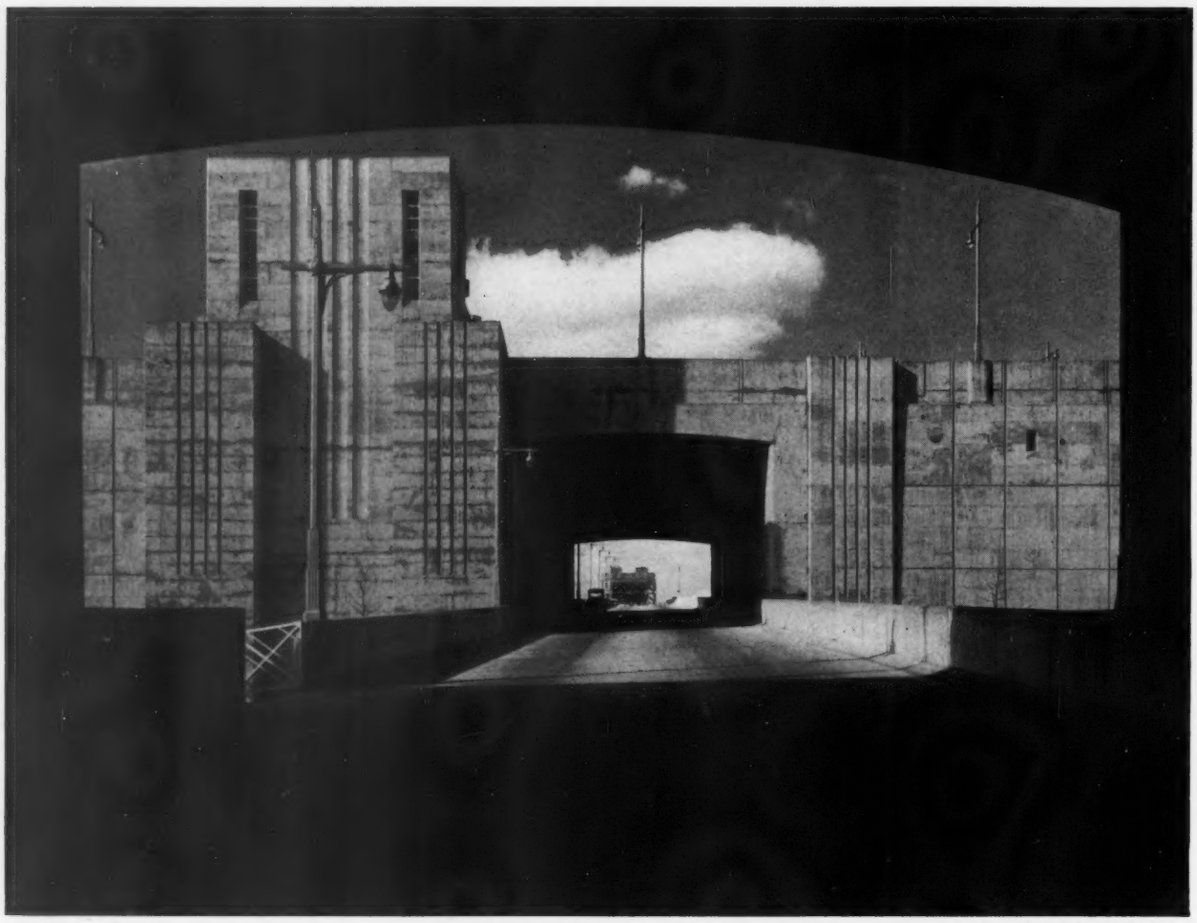
275 APPROACH TO TRIBOROUGH BRIDGE, NEW YORK—V-JOINTS GIVE RHYTHM



Richard Averill Smith

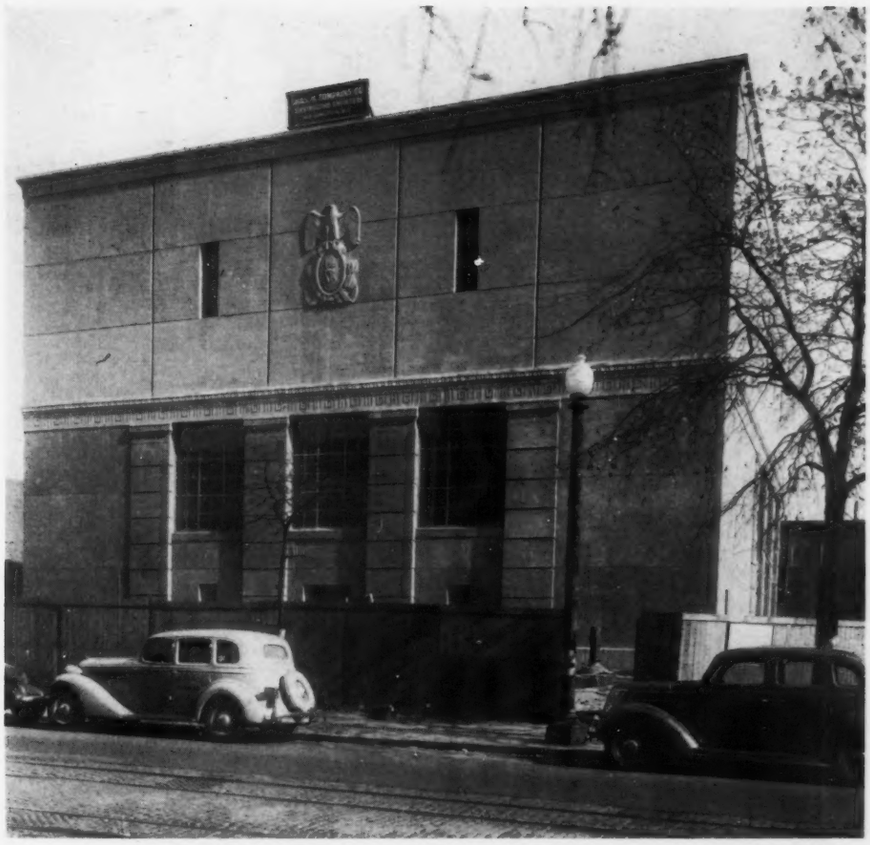
Another portion of the Triborough Bridge Approach, at the Randall's Island Junction, with "V-Joints" to break surfaces—O. H. Amman, Chief Engineer; Allston Dana, Engineer of Design; Aymar Embury II, Architect

and its approaches to the other, produces an effect of dignity and magnificence that would not have been obtained either in a strictly commercial wall or in one where the decorative element was more prominent. The designers feel that it was a mistake to introduce no horizontal lines in the higher portions of the walls, since the pour joints are in many cases apparent at places where they are distinctly undesirable. Mr. Dana and I have determined that, in any future work in which we collaborate, the necessity of taking care of the joints between the horizontal lifts will be fairly met.

Since substantially all the work in this bridge was of concrete, there were points where special accents were needed, at the ends of the bridges, at the pylons, etc. In general, the results at these points have been exceedingly good, partially because the forms selected were simple and partially because the contractors exercised extra care at these points.

In the Warehouse of the Government Printing Office in Washington, the problem is somewhat different and a combination of types of concrete work resulted. This is a three-story building of which the upper story is a train shed lighted and ventilated from the top, so that no large windows were desired. The story below is a sorting and storage room for which a considerable amount of light was required and the lowest story is a shipping room with loading platforms for trucks in which a moderate amount of light only was required. The building is of concrete, but since it was a Federal building, it was felt that the general classical character of the government buildings in Washington should be recalled at least in part. This was accomplished by decorating the lower two stories with a rusticated Doric order, cast in concrete, and leaving the upper story plain with vertical flutes of comparatively large dimension and horizontal V-joints of small dimension to take care of the lifts of the pour. The forms for the upper portion of the building were of the sheet type, approximately 4′-0″ x 6′-0″, and were laid out on the drawings with the ver-

Two views, front and back, of the Warehouse of the Government Printing Office in Washington, for the design of which the Supervising Architect of the Treasury gets credit

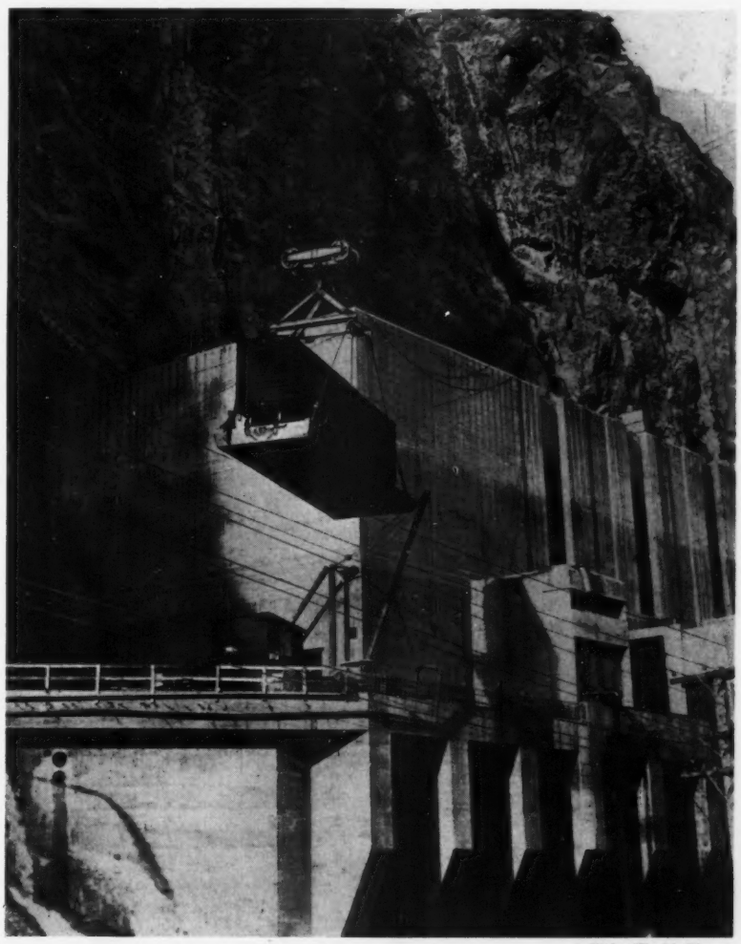


Wide World Photos

The most impressive use of concrete has been in great structures like Boulder Dam in Colorado, where the material is so obviously the proper thing and the surfaces are so large that imperfections become negligible so far as the handsome appearance of the monumental structure is concerned

tical height as the greater one. The building is, as a matter of fact, very successful from the æsthetic point of view. Its success is very largely because, while the ornament is derived from stone forms, it is obviously cast concrete. The contractor, however, states that the cost of the ornamental part of the structure was not very much less than it would have been in stone masonry so that one of the principal reasons for the use of concrete has not been complied with as far as the street faces go. The rear wall, which backs up against otherwise occupied property, is perfectly plain. The difference in appearance in the upper stories, in which the flutes are installed and the lower two stories, in which a plain wall only broken by an expansion joint is used, indicates fairly well the difference between the plain and the decorated surface, the cost of the two portions being the same.

The most impressive use of concrete, however, has been in the great concrete dams erected for flood control and power production in various parts of the United States. In these, the size of the structure is so tremendous that any minor differences of surface are negligible. While it is possible that equally handsome structures might have been erected of brick or stone masonry, the plastic character of concrete is much better adapted to the curved surfaces and peculiar angles that are required for these dams. Boulder Dam may be taken as a type. Here are structures for which concrete is undeniably the proper material and in which the result bears out completely the statement made at the beginning of these articles—that a soundly designed engineering structure almost inevitably produces a satisfactory result. The writer is not able to say how much these buildings were studied for æsthetic effect as well as for structural significance, but it is unquestionable that these great concrete dams are among the most beautiful objects which have been erected in our time.



Wide World Photos

JOHN OSBORNE SUMNER

1863–1938

EDITOR'S NOTE: *Every student of architecture who attended the Massachusetts Institute of Technology between the years of 1894 and 1933 has cause to be grateful for the cultural background he was privileged to absorb under the guidance of Professor John Osborne Sumner, whose course in European Civilization and Art was probably the most complete and scholarly presentation of the subject to be found anywhere. Professor Sumner died on February 20th of this year, and the hundreds of practicing architects who remember him as guide, counselor, and friend will mourn his passing. The following tribute was written in collaboration by several of his colleagues at Tech.*

JOHN OSBORNE SUMNER was born in Boston on November 23rd, 1863; graduated from Harvard in 1887; and continued his studies in Europe before coming to teach at the Massachusetts Institute of Technology in 1894.

While the years following his graduation were spent partly in travel and study in England and on the Continent, on two occasions he resumed his studies at Harvard as a graduate student. His interest during this period was focused upon the political history of the Confederate States, which was the subject of a paper that he read before the American Historical Association in Washington in December 1889.

Serious trouble with his eyes in 1893 prevented the continuation of his studies in Germany and Italy and necessitated his return to America, closely followed by his acceptance of an Instructorship in History at Technology in 1894. In May 1900 he married Mary Shreve Hutchinson of Philadelphia and in 1907 received the appointment as full Professor in the Institute.

His European training, as well as his scholarly instincts, found expression in the meticulous accuracy of his teaching in European Civilization and Art. This course as given to the students in the School of Architecture until his retirement in 1933 was his own creation. Its scope was limited only by the time available. Professor Sumner lived in and for his subject, spending many summers and much of his own holiday time in gathering new information gleaned in the museums of Europe to add to the store of slides, photographs, and books which his tireless interest accumulated for the improvement of his lectures.

To the vast majority of the students who attended his courses, a new field of the greatest cultural value was revealed. Civilization and Art were words whose significance Professor Sumner endowed with a new meaning. Through the wealth of his own knowledge and the stimulus of the interest that he imparted students were conscious of a fresh inspiration, of a broader outlook.

While setting a high standard for his course, Professor Sumner was infinitely patient with the baffled beginner if he showed even a glimmer of intelligent interest or understanding. But woe betide the student who was late or negligent and hoped to find tolerance because the time stolen from Civilization and Art had been devoted to the clamorous demands of Design. At times impatiently, but more often with despairing humor, Professor Sumner protested in and out of season at all inroads upon his work.

His office in the Rogers Building, its chairs and tables heaped with as yet unclassified magazines or photographs, was most hospitably at the disposal of interested students. A comfortable arm chair and a friendly cup of tea brought the amenities of his wide knowledge and strong social inclinations to his guests and revealed the kindly qualities and profound learning for which he was valued by so many of his students and fellow teachers.

NEW YORK HOUSING

HARLEM RIVER HOMES AND WILLIAMSBURG HOUSES

BY TALBOT FAULKNER HAMLIN

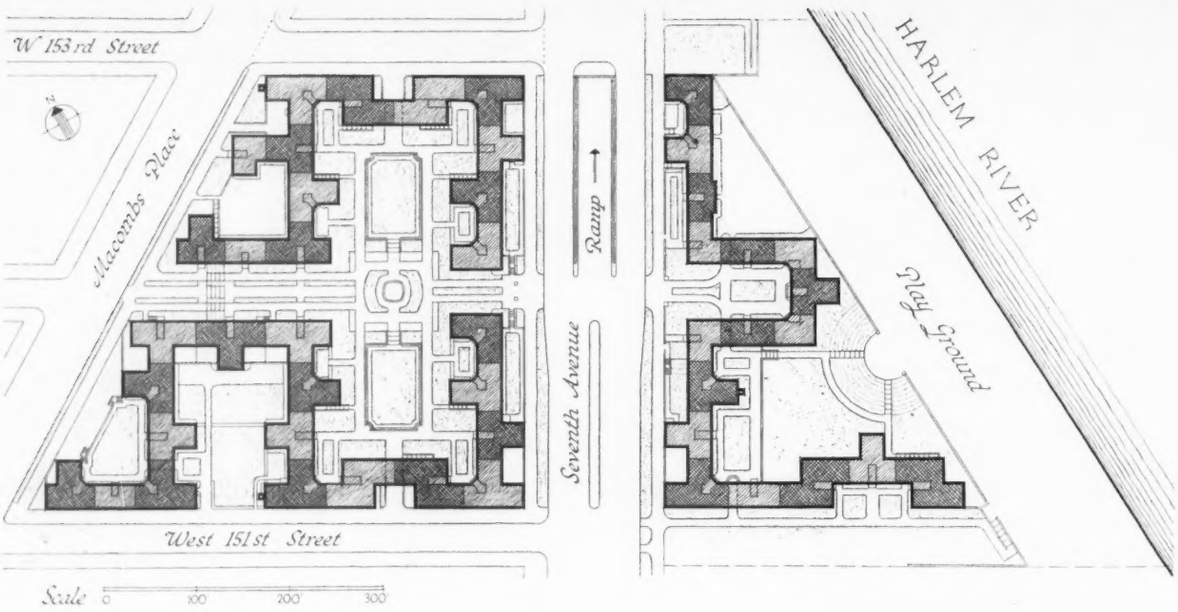
At last, in our midst, "housing" exists. Only a little, only a beginning, only a drop in the bucket, to be sure; but at least there the buildings stand, and people run in and out of them, and eat and sleep in them. In New York some 2,300 families of former slum dwellers—nearly 10,000 people—have for the first time places to live in that are worthy to become, and to be called, homes. To us who have watched and coddled and fed the housing movement, who have talked housing and listened to each other talk housing almost continually since the war, that seems an almost unbelievable fact. We have begun to build; the words are being incarnated in brick and steel and concrete and glass.

As the first fruits in New York of the new Federal housing movement, Harlem River Homes and the huge Williamsburg Development have a great importance. In them is being tested not only the whole validity of the housing movement in New York, but also the achievements of our design skill and the utility of our building materials and techniques. These two groups are beginnings only; but we should learn from these beginnings as much as possible, so that what is to follow may be as good as we can make it.

One may approach Harlem River Homes from the west. On the heights above, the Victorian houses and the thirty-year-old apartments of Convent and Edgecomb Avenues are rapidly filling with the more prosperous negroes; the magnificent view from the terrace at Edgecomb Avenue and Colonial Park is already entirely theirs, and they can look

Fairchild Aerial Surveys, Inc.

Harlem River Homes as seen from the air looking in a direction a little to the west of north



The Federal Housing Project known as Harlem River Homes was designed by a group of architects working with Archibald Manning Brown as Chief Architect. The associates included Charles F. Fuller, Horace Ginsbern, Frank J. Forster, Will Rice Amon, Richard W. Buckley, and John Louis Wilson. Michael Rapuano was the Landscape Architect while Paul Wunderlich and Fred N. Severud were the Engineers. Unit plan below shows typical arrangement. The photographs on the next three pages show the present aspect of the development

out over the crowded roofs of their own Harlem below. But, as one walks down the steep wooden stairs that lead from Edgecomb Avenue to the lower levels of the park, the economic atmosphere, so to speak, changes; at the bottom, across the crowded park playground and east of Bradhurst Avenue, all is slum—the crowded, pullulating slums of black Harlem. Approached so, the warm red brick of Harlem River Homes and the wide and ample windows come as a heart-warming surprise.

The Harlem River Homes project had a difficult site; it straddles Seventh Avenue, whose traffic cuts it into two parts, each part trapezoidal in shape. The problem lay in adjusting to this site a sufficient number of the Z, T, and L sections of which the whole is built, and yet to preserve as much useful open space as possible. One street, closed to traffic, cuts the western portion in two; this street was chosen as one axis, and across it was drawn another axis through the greatest length; on these the great plaza or playground—the center of the whole — was developed, and the buildings grouped in the simplest way around it. Naturally, this portion took a basically formal shape, and the architects have freely accepted this axial arrangement as a logical result of the conditions. Yet so simply has this all been done, so pleasantly do the buildings step back along the sloping western lot line, that the impression is never of any overpowering or imposed formality; it all seems merely gracious, natural, and designed. It has definite "form," and much of the effectiveness of the

whole comes from this "form"; but monumentality never seems to have been too consciously sought, and the concentration of openness in the large plaza makes the whole seem much larger than it is. Whether one enters through the north or south passages, or down the closed street east and west, the impression is strong that one has left chaos and entered a true community, every part of which is related to every other part and exists for the benefit of the whole. On the other side of Seventh Avenue, a different, more rambling type of plan is found; for here the great feature was the river, and all had to be designed with relation to it.

If the general layout is well considered, the details of planning are equally good. The sunken graveled playgrounds in the plaza are brilliantly conceived, and the circular element in the center, with its quaint sculpture, has just the necessary formality for its position. One welcomes especially the sculpture throughout the development; it is all by Heinz Warneke, with the assistance of T. Barbarossa, R. Barthé, and F. Steinberger. The negro laborer against the pier at one end of the court balances a negro mother and child at the other; they are sensitive, dignified, serene—excellent in their human quality and in their relation to the architecture. The bears, too, in the eastern court are delightful. The cobble-stone pavement is good, as is the massing of the planting in the less trodden and more withdrawn areas. The simple lines of trees in the cross street are well placed. In the eastern section, the sloping court that leads down to the playgrounds at the river bank, and ends in a lovely quarter-circle banked garden, is beautiful. And all of this effect seems attained with the minimum of effort and expense; nothing is forced; there is an almost total absence of expensive lawn. Wherever people are likely to move about and children to run, one finds the interesting texture of cobble-stones; wherever through, traveled paths occur, there is smooth pavement. Almost the only adverse criticism of layout possible is that the minor courts may be too enclosed, too shut off from the main open spaces. These larger areas, however, because of the playgrounds, will be at times extremely noisy; perhaps the smaller courts will have the advantage of quietness to compensate for their separation from the larger spaces.

The general impression of the exterior is as pleasant as the layout. The window arrangement falls into simple, repeated rhythms, broken by the clear vertical note of the stair windows and the entrance doors below. The

Photos by Kenneth Reid

Photos by Kenneth Reid

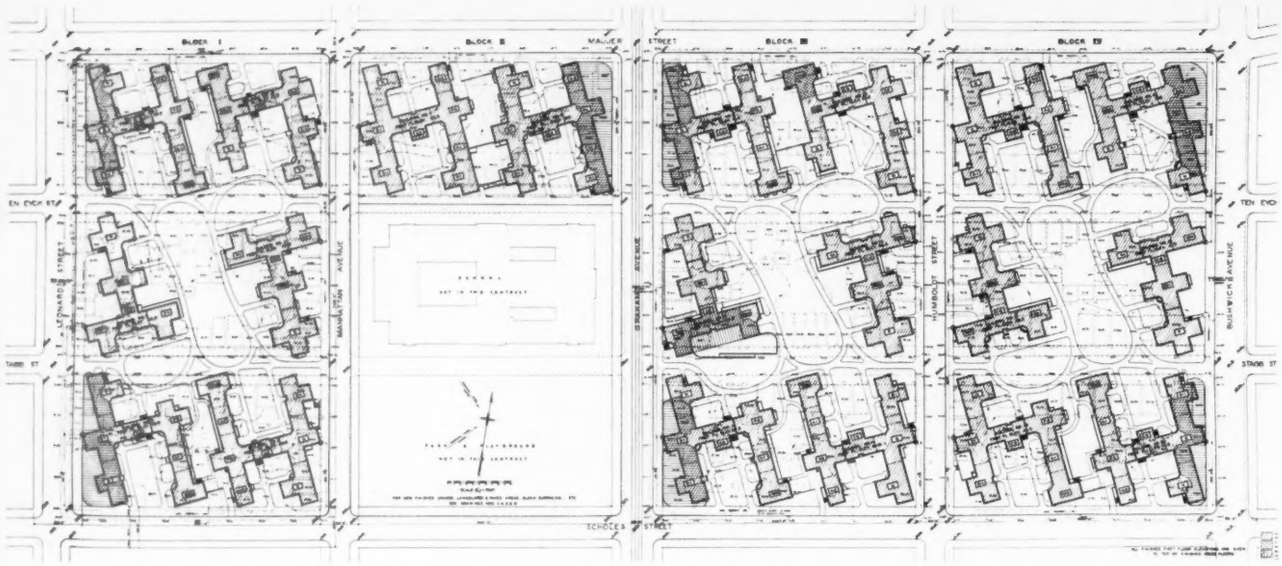
proportions seem generally harmonious, and the perfect simplicity of it all is most winning. The red color of the brick—except where it is slashed across with the white of a deplorable efflorescence — is warm and inviting; the whole has some of that human charm one finds in the brick-built portions of New England towns of the thirties and forties.

Yet, as one walks around the group, one's first enthusiasm begins to be criss-crossed with little reservations. The composition of the wings overlooking the river-side garden fails in the clarity found elsewhere, and the open loggias at the ground level, with their brick piers, seem to be placed in a helter-skelter manner; the whole becomes obviously a "back." Of course there may be good plan reasons for the placing of the porches and the existence of the apparent confusion, but that is no excuse for the appearance of confusion. The beautiful clarity to be found elsewhere is absent; more study might have clarified this "back" of the group as it has the front.

Details, too, seem often pinched, thin, and routine. The entrance porches and their overhanging slabs are obvious to the point of dullness. Steps and exterior lighting and all of those little details which sometimes make a composition more than adequate are handled in an unimaginative way; there is no element in the group to which one turns back again and again out of pure delight. The grayish color of the steel sash is lifeless and drab, and the long concrete band courses used here and there are stained and ineffective. Only the lamps at the corners of the buildings flanking the main entrance on the west side of Seventh Avenue seem to have that quality of creative imagination that is the soul of good detail; this whole Seventh Avenue front, with its terraces and steps, has a life and verve not common in the details elsewhere.

This lack of interest in details grows upon one. One longs for just a touch here and there, if only to reveal a designer's pleasure in creation. One wishes the copings had projected slightly; what might have been, if other details were more interesting, a piece of dignified reticence, becomes, in the light of the banal details elsewhere, merely an expression of another banality. The whole, in detailing, looks tired—as if the creative drive and the creator's pleasure, which had sailed so triumphantly through the period of general planning and design, had suddenly failed when it came to the last, completing touches. Harlem River Homes is so generally beautiful that one longs for it to be perfect. What might have been great architecture is merely—very good.

Photos by Kenneth Reid



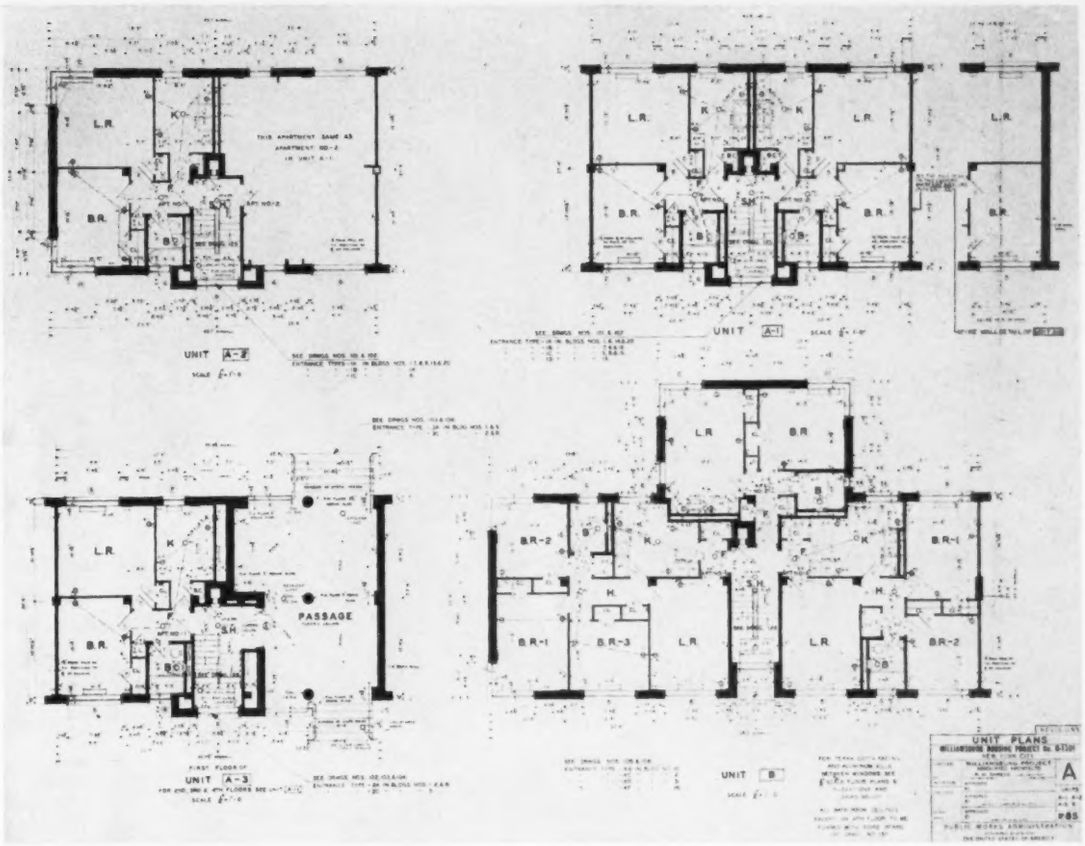
The extensive new Federal Housing Project built in the Williamsburg section of Brooklyn, New York, had for its Chief Architect R. H. Shreve of Shreve, Lamb & Harmon. Associated with him were James F. Bly; Arthur C. Holden; Gurney & Clavan; Paul Trapani; Holmgren, Volz & Gaardstein; M. W. Del Gaudio; William Lescaze; John W. Ingle, Jr.; and Harry Leslie Walker. Constultants for Landscape Architecture and Engineering were Vitale & Geiffert; Gilmore D. Clarke; Meyer, Strong & Jones, Inc.; Fred Brutschy; and George E. Strehan. Typical unit plans are shown opposite and photographic views of the completed project cs it appears today are grouped on pages 289 and 291

The development at Williamsburg, is over twice the size of Harlem River Homes, with 1,622 apartments. In entire conception it is almost the direct converse of the Harlem project. Instead of the informal formality of the smaller group, the Williamsburg project has consistently sought for a more mechanical regularity, modified by a consciously sought complexity. Instead of the quiet continuity of Harlem, in Williamsburg one has definitely separated buildings, repeated in similar positions across the wide sweep of the lot. Instead of the repose of continuous red wall, Williamsburg is obstreperously striped. Where, in Harlem, there seems a lack of imagination in detail, Williamsburg shows almost an excess of imagination, so that details are sometimes erratic. So different are the two groups in effect that it seems almost impossible to believe that the unit plans and basic arrangements of which they are made up are almost identical; yet such is the fact.

The most obvious thing in the plan illustrations of Williamsburg is the placing of the buildings on an angle with the street layout. Strangely enough, this fact, so important in the plan, in the actual group is not apparent except in a few places; so great is the number of buildings, and so large the area they cover, that the impression, as one crosses the two streets that divide the whole into three major blocks, is merely a fleeting wonder as to why the *streets* were laid out crooked . . . The reasons for this change of angle are obscure. Good orientation is an obvious rationalization, for following the street pattern would have given as much actual sun in the rooms; and the present layout converts the courts into perfect channels for our most vicious northwest winds, and blocks off the southwest winds that are so important in summer. I have been told that the chief aim was to break up the street facades, and allow the feeling of space to weave in and out on the street fronts. Whether a similar variety could not have been gained in a less violent fashion is debatable. Certainly the unsymmetrical, saw-tooth type of effect of the street fronts is neither inviting nor informal; it has an aggressive formality of its own, a rhythm that is jagged rather than serene and in a queer way emphasizes rather than detracts from the institutional character of the whole group.

This jagged effect is also obvious in the long vistas through Ten Eyck and Stagg Walks, which replace two closed streets. The long rows of wing after wing projecting into the open area cornerwise produce a feeling of weary repetition; the insistent vanishing points of the angular buildings conflict with and destroy the simplicity of the straight view without enriching it.

Within the courts of the group, where the feeling of this change of angle is not apparent at first sight, its indirect effects are still present, and the views down the length of the



main courts end in a confused series of projections and recessed courts. It seems unnecessarily formless and disintegrated; the eye searches in vain for tie-ups and carry-overs. The æsthetic sense is always attempting to discover or to create pattern—that is, some satisfying system — in what it observes. When that effort is frustrated, restlessness follows. This is not a matter of style nor of theory; it is an observed and general psychological fact. Of course there is a system in the plan, but it takes a most carefully trained and sophisticated, expert eye to discover it—it is a system to bring pleasure to the esoteric few. Surely, of all architectural problems in the world today, a housing development—people's architecture if there ever was people's architecture —would seem no place for esoteric display . . .

It may have been some feeling of the obvious lack of pattern in views within the group which led the architects to the choice of a most emphatic imposed pattern on the exterior of the buildings themselves, and also to the choice of reinforced concrete with exposed spandrel beams as the method of construction. Yet, in actuality, this striping, by emphasizing the vanishing points of every different plane of wall, seems somehow only to add to the feeling of restlessness, so that when one comes around suddenly to the absolutely symmetrical facades of a few of the buildings one feels an enormous relief.

The effectiveness of the individual buildings is undoubted. The striping of brick and concrete and the contrast of the light walls which front the stair towers make a vivid picture, added to by the skilful variation of window sizes and the occasional use of dark terra-cotta mullions between adjacent windows. But a closer inspection and a longer look — the tenants' view of these things is almost continuous—makes one wonder. Had the spandrels run through from window head to window sill, with brick just for the window height, the whole balance of dark and light would have been better, and there would have seemed an adequate æsthetic purpose for the whole system. As it is, the light concrete bands look thin, and the whole height-relationships of beam, beam to sill, and sill to window head look tentative and meaningless.

Of course the silly New York law requiring 12″ window spandrels is responsible for part of this; but Williamsburg is a project built to endure and to be seen by thousands who do not know the New York law. Why, then, wasn't a different solution chosen? The architects knew the law, and it was just as much part of the program of their design as the number and the size of their rooms. To cite it

as a cause for a lack of perfection in the effect of the completed design seems therefore scarcely important or relevant.

And no law governed the color choices for the materials. The stair halls are faced with terrazzo slabs. They are a cold gray. The concrete exposed varies from quite yellowish to gray and green and black where it has stained; even where its surface is uncontaminated the color goes but ill with the stair-tower slabs. The brick is a grayish warm pink, without definiteness, and is rapidly dirtying to a mottled gray. Each of these colors has a rather melancholy tone, and each seems to be having its rather undistinguished and mournful say in a totally different and discordant key. One welcomes the sharp yellow and bright blue of the entrance doors, if only because of their clarity, though they add to the confusion.

Yet the largeness of the whole, the wide views in the chief courts, the general sense of airiness remain as dominant impressions. There is a quality in these buildings, criticize them as one will, which is fresh and inventive and alive. Walking through them one comes with all the more shock upon the school in the center—a school, as far as date goes, as modern as they are, yet in everything else outmoded. Of white brick, it shouts its discordant note insistently; its inept proportions and its extraordinary, crude, "modernistic" detail are alike a disgrace. If that is a standard design for New York City schools—well, it is just too bad for New York's art consciousness. Why the rigid standardization of the New York Board of Education should have unnecessarily foisted such a monstrosity upon Williamsburg despite the architects' protest is a question, I suppose, political rather than æsthetic. Whatever the cause, there it stands, a prize example of "ye olde moderne." Snyder's Tudor schools of thirty years ago, and even the thin colonialesque schools of ten years back, were really more straightforward and expressive than this stiff whiteness . . .

It is pleasant to return from this school to Williamsburg Houses, and especially to that element in them which to me is most interesting—the imaginative and creative character of most of the details. In them there is continual pleasure to be found in the choice and use of materials, in the freshness and originality of the forms. The front of the nursery school in one of the project buildings, for instance, with its pleasant alternations of glass brick and windows and its play terrace, is delightful, despite the lack of relation between the play terrace and the surrounding spaces. The shops, with their dark, clear blue parapets above them, and their suave curved ends, bring into the whole a much needed variety. The way the treatment of the corner stair-tower fronts is carried around the corner is interesting, though the levels of the stair windows and those next them seem to lack coordination unnecessarily.

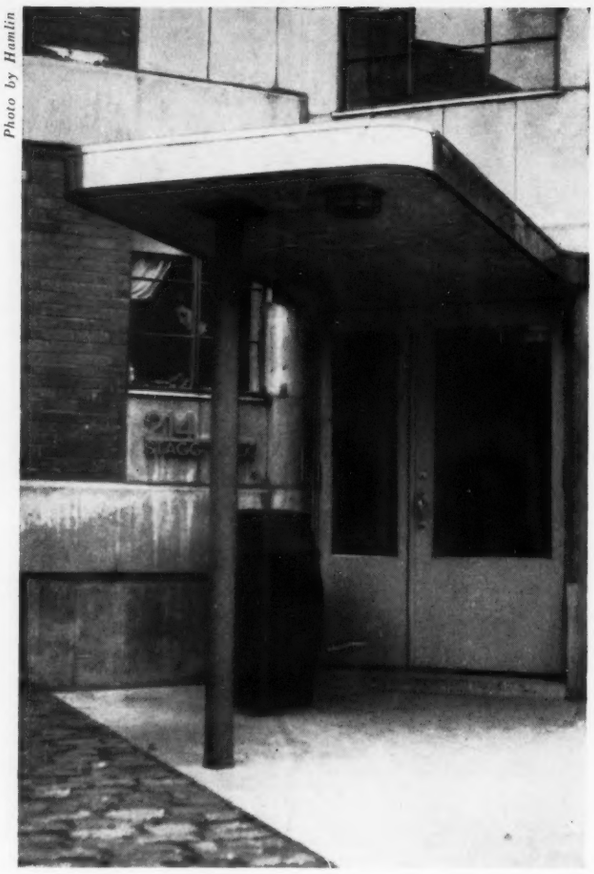


Photo by Hamlin

An entrance at the new Williamsburg Houses

Especially interesting are the entrances themselves. The porch and hood roofs are curved at the corners and swept back gracefully into the wall, and the edges are covered with stainless metal that is gleaming and attractive, detailed with grace and finesse. The addresses of each entry are clearly marked upon it in interesting yet legible lettering, placed just at the eye level where they cannot be missed. And at the doors themselves the curving of the jambs and the bright clear colors of the door finish give the right touch of invitation. This is all just that kind of imaginative and carefully studied detailing which is so unfortunately absent in the other project; alongside of these bright and imaginative entrances the stained and characterless concrete slabs at Harlem would seem drab indeed.

Of the landscaping at Williamsburg, it is difficult to say more than the rather dubious "adequate." All the imagination found in the building details is absent; the layout of paths,

Photos by Kenneth Reid

play spaces, and open lawns is almost painfully conventional and banal. The curved paths and the almost aimless spotting of trees here and there emphasize the confusion of the borders of the open spaces. Of that creative imagination which has controlled the much more limited planting at Harlem River Homes, and made its courts such a delight, there is in Williamsburg little trace. There are trees, and grass, and paving, and one can get around the project; that is about all. It is infinitely less good than the planting at the Hillside Project in the Bronx done three years ago by Mrs. Cautley.

The apartments themselves in both these New York projects are almost identical, for both are based on the Unit Plans prepared by the Housing Division of the Department of the Interior. They are clever, efficient, and economical. The use of the kitchen to give additional entrance to the bedroom area works well. Yet as living places, they are not inspiring; there is in them a definite feeling of cramped minima. Even the large bedroom, when furnished with a double bed, a chest of drawers, and a chair and table, gives the impression of being crammed full, with no space to walk. To put two children into the small bedroom calls for a shoe horn. It is possible that similar areas in slightly narrower and longer proportions, though allowing less flexibility in arrangement, would have given a more open and airy feeling; any nearly square bedroom is difficult unless its minor dimension is at least twelve feet.

In rooms as tight as these, the careful correlation of mechanical equipment and of structure with the room becomes of prime importance. Here the type of construction chosen has been a major handicap in Williamsburg. The thickness of the concrete spandrel beams has forced all the heating risers well out from the wall; in some places they are at least 10″ away from the wall, and, unprotected, they form a definite hazard to the inhabitants and prevent adequate use of the wall surfaces for furnishing. In most cases, too, the horizontal runs from risers to radiators are long and run above the floor, so that an additional furnishing difficulty is produced. Moreover, the structural columns form breaks in the walls of almost all the bedrooms, in the most inconvenient places. These are drawbacks which might well be controlling factors in the choice of structural and mechanical systems in all future housing work. In Harlem River Homes, where the structure is more conventional and less spectacular, these problems do not arise.

Both of these projects bring up one important question: Why are not living balconies more used in American housing? Our long summers and autumns make them desirable; the pleasant outlooks possible in large-scale development would make them definite amenities. In the Cedar Central Project in Cleveland they are present, and add immensely not only to the desirability of the apartments but also to the interest of the exterior. They are universal in the Swedish housing, and common in Italy; surely the possibility of developing them here, and so giving one more impulse towards health-giving outdoor living, might well be studied in America.

* * *

But the major problem which these new housing projects bring up to any unbiased observer is not one of layout, planning, or æsthetic design—it is the problem of bad, or ill-considered, construction. The appearance of both of these jobs reveals a shameful condition. Staining and efflorescence destroy color and form, and evidence walls full of water. The leaks between the concrete and the brick in Williamsburg became almost a disaster. The concrete basement walls in both projects are marred and patched and discolored and ugly. The brickwork, particularly in Williamsburg, is blotched and discolored by leaks and dripping; the general appearance is shocking. And this condition is not limited to these New York projects.

This is a question of prime importance in American architecture. It would almost seem as though the more science we had, the more new building materials and building methods, the worse we built. Here are groups costing millions, designed by good architects, and well designed, built by some of the country's best known and most reputable contractors, engineered by the best engineers, with everything checked and re-checked — and in less than a year these buildings, many of them, look a disgrace. Where is the error? What is the matter?

Surely, if we cannot build well in the newest and most loudly advertised ways, let us build well in the older, proven ways. If modern materials don't work, let us use materials that do. Let us do our experimenting on private houses and private buildings generally —or, better still, let the building material people do the experimenting—and not inflict experiments on thousands of people and on the government. For one of two things is true: either these are experiments, or else our sense of building standards is shockingly low.

One definite lesson seems to be obvious.

Photos by Kenneth Reid

Concrete, as an exposed building material, in this climate, under these conditions, and as used in these projects, is definitely unsatisfactory. There are many ways in which it can be used, but they involve considerable expense in surfacing and finishing. There may be climates, like that of Southern California, where concrete used as it is in these projects might be satisfactory. But in a smoky city in the New York latitude it just does not work. And there is one other thing: cannot the inventors and building material people give us, at reasonable cost, a mortar as good as the best that was used a century ago? Or is the trouble in the use of it, in skimping its strength and quantity?

* * *

Yet, despite all these criticisms, the general effect of a visit to the two projects is exhilarating and enheartening. They point the way; but they are also, themselves, extraordinary achievements. In every really important general matter of land-usage—in air, in light, in a sense of green and growing things as a concomitant of living; in the creation of an atmosphere of humanity and decency, a place where children would be glad to grow up; in the development of a community that brings with it a new vision of democracy and of progress—these two developments have qualities that no money can buy. In every single one of these matters they are better than the most expensive apartments of Park Avenue.

And the cost? I was told that the basic economic rent at Williamsburg was $11.55 per room per month. With the subsidy, this brings the base rent to $7.12. But if housing with all these advantages can be built to rent for less than $12.00 a room a month, how long will our middle classes and even the wealthy put up with the congestion for which they pay $20.00 and more? That is a significant question. If large-scale planning on large sites can give the amenities we find here, will not daring investors see the significance of this large scale development? Already the Metropolitan Insurance Company has made a beginning, by its proposed development in the Bronx. Others will follow. By so raising the housing standards of the poorer classes, we may be raising the standards of housing of all classes; in the end, though we may never, under present land systems, reach those of the very lowest income, we shall have worked a drastic revolution in the entire concept of land usage and of the relation of land to housing—a revolution which will profoundly affect the city planning and the living habits of the future. And that, alone, would make these projects worth their cost, however great.

Photo by Kenneth Reid

Looking down into one of the entrance courts at Harlem River Homes

COMPETITION IS FIERCE

BUT THE GREAT ARCHITECT IS EVEN FIERCER

BY EUGENE RASKIN

"Have you," the Great Architect waved a letter before my face, "been approached about this business of compulsory competitions for public buildings?"

"Why, yes," I replied. "In fact, this morning I received the same letter as you, and have already sent in my response."

"What, already?" An expression of surprise crossed his features, followed by one of resignation.

"Tsk, tsk," he tsked. "Ah, well, such is the impetuous nature of youth! Rushing right ahead, never pausing to consider . . . "

"Consider what? Surely there's no question as to the merits of the proposal . . . it's merely a matter of getting enough people together on the subject to make it a legislative reality. I don't see what's so impetuous about sending in my response without unnecessary delay . . . "

"It's not your lack of delay that I call impetuous," the Great Architect's tone was tolerant. "My dear boy, it's the fact of your acting without thought that I criticise. You put your attitude in a nutshell just now when you said there was no question as to the merits of the idea. Why such absoluteness? Why such sublime assurance? Have you given it deep thought? . . . have you discussed it with others? . . . weighed the pros and cons? Don't answer, I'll tell you. No! And not until you've done so will you have the right to express an opinion. That's why I deem your action impetuous. It's not speed I decry, but senseless haste."

"That's pretty strong language," I returned. "But I could overlook it if I felt you had some point to make. However, in this case, I have more than a suspicion that you are merely enjoying the sound of your own voice. And if that offends you, I'm sorry, but I don't regret it, if you get my meaning."

"Yes, my lad. I understand you. You were never other than transparent. Right now, you are riled because you know you are about to be proved wrong, and you don't like the feeling."

"Let's get back to the subject," I put in, "before we really begin to get personal. Now, do you mean to imply that you would prefer the present system—if one can call it a system —to continue? Do you think it fair that the commissions for most public buildings go to a small group of established architects who have, shall we say—the right contacts?"

"No," said the Great Architect. "I haven't implied or thought anything of the kind. You're anticipating again. I said merely that the matter requires thought and discussion. And first, as I've so often told you, we must get down to fundamentals. Well, let's begin this way: The commission for a public building should be given to the best man. Right?"

"Of course. That's just what . . . "

"Whoa." He raised an arresting hand. "Just a minute. What do we mean when we say 'best man'? Do we mean the most talented? But the fact that a man is talented is a result of circumstance — chance — just as much as having connections, or background. In fact, more so, because a man is born with his talent, while connections may be acquired through his own efforts. It would certainly not be fair, then, to select the 'best man' on the basis of talent alone, ignoring other qualities for which a candidate deserves more credit."

"But look here," I interrupted, "we're not seeking the 'best man' at all. What we're after is the best building. The selection of an architect should be based on design alone. That's why competitions should be made mandatory."

"Very well put." The Great Architect was unperturbed. "We come, then, to the question: What is the best building? The answer, according to you chaps, would be given by a jury. But you are perfectly aware that given a group of drawings, ten different juries would pick ten different winners. The selection of a

jury, therefore, is vital, as far as finding the prize design is concerned. Correct?

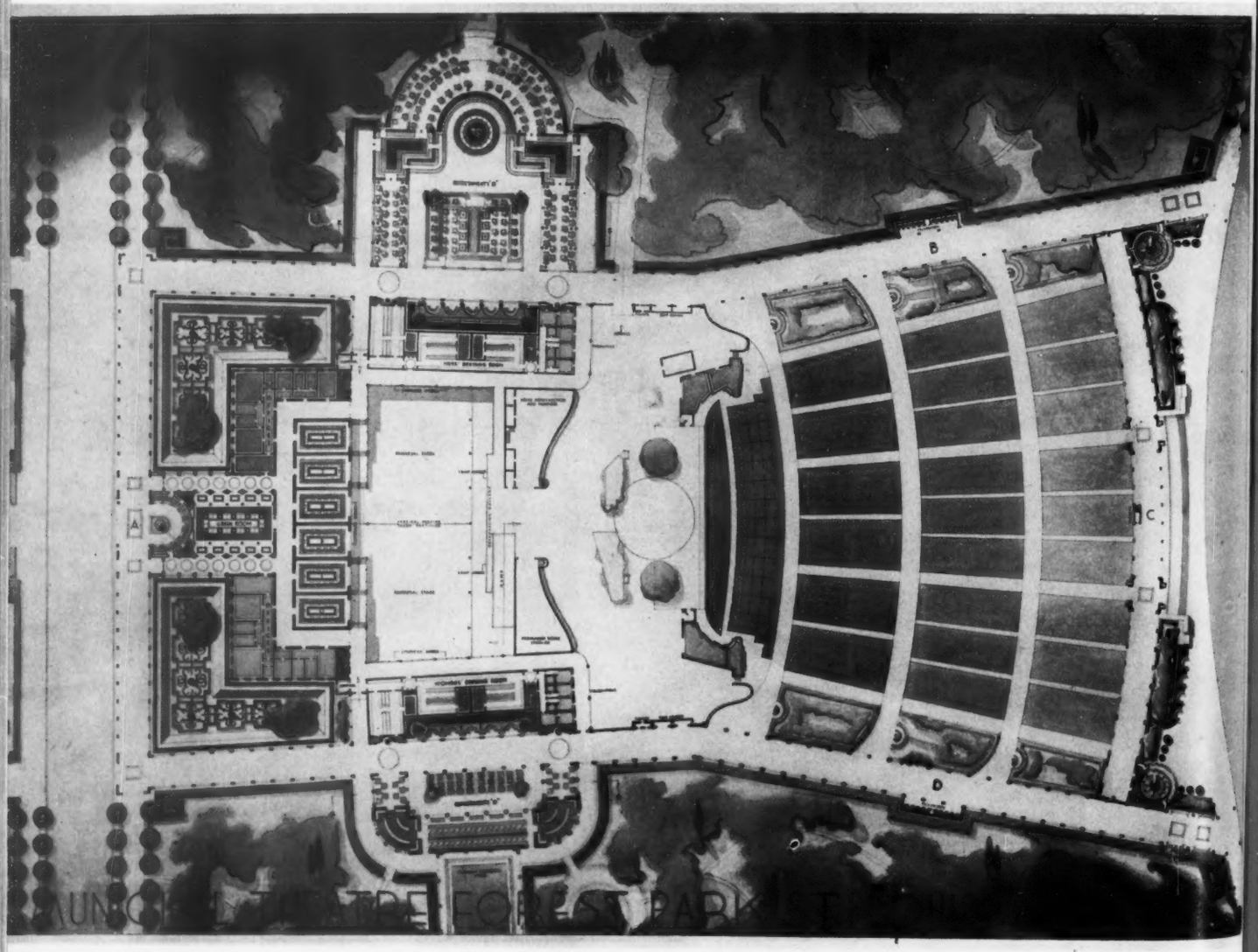
"Naturally. We assume that the best possible jury would be chosen for each competition."

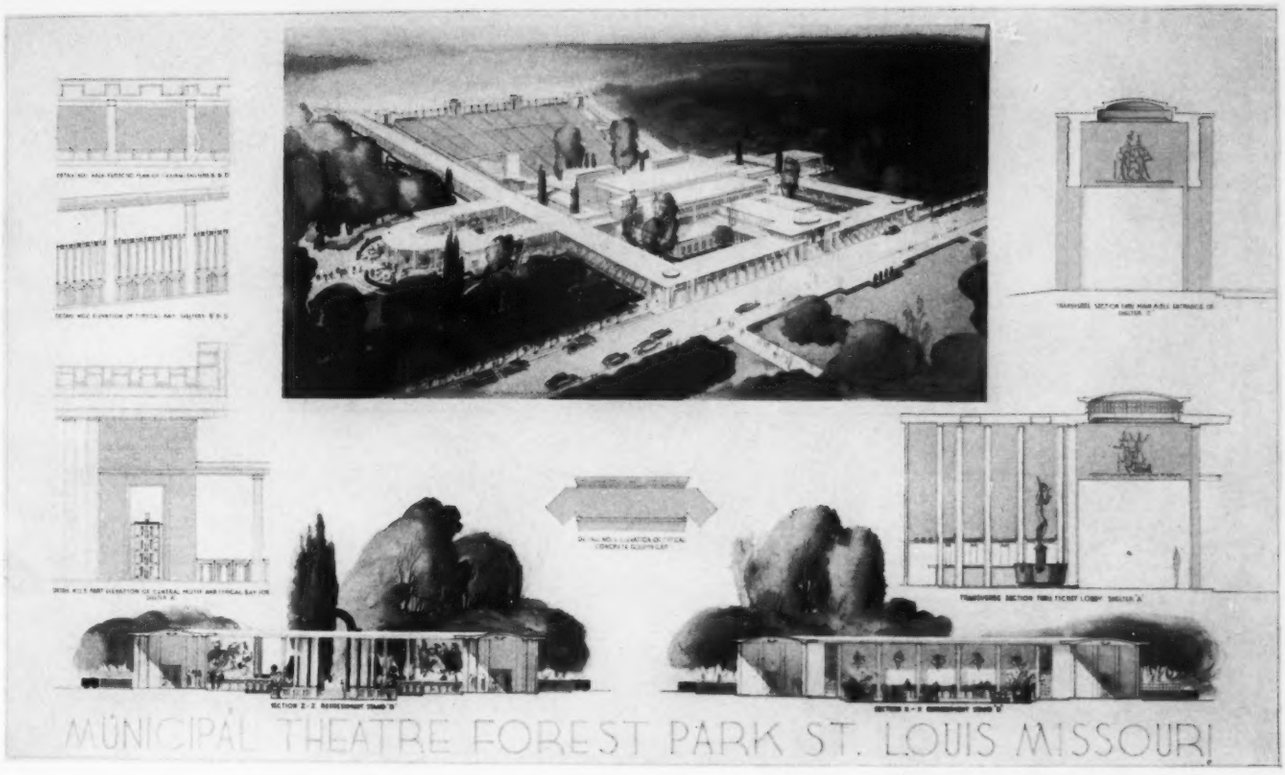
"There you are," he cried triumphantly. "There's the crux of the whole business! How do you propose to select the best jury? And don't forget that the choice of a winning design is directly dependent upon the choice of a jury. Now, if your jury is to be created arbitrarily, by appointment, you might just as reasonably continue to have the architect appointed, or keep using the civil service staffs. The only logical alternative is to choose a jury in what you call the 'fair' way—by competition. But here, again . . . who's going to do the deciding? Another jury? You see, the whole thing becomes ridiculous."

"I could see that from the very beginning," I said. "And now that you've given the subject the benefit of your searching analysis, what's your conclusion? Are you going to respond to that circular letter?"

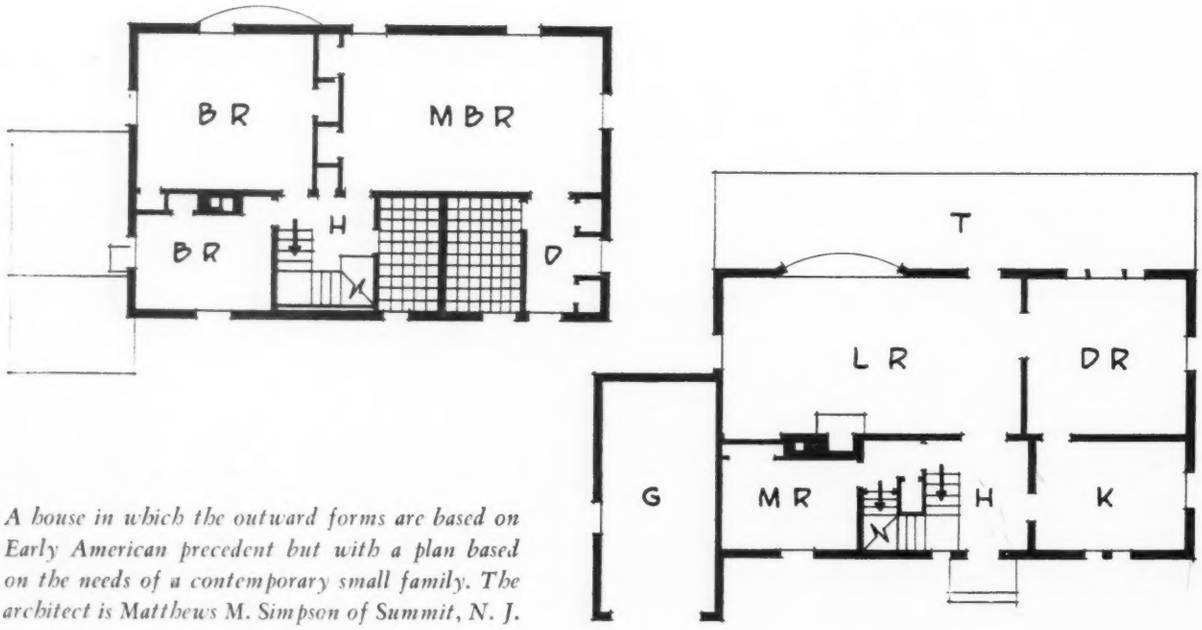
"Why, of course," replied the Great Architect, casually. "It's the only thing to do."

Plan of winning design in a competition held in St. Louis for the reconstruction of the Municipal Theatre. Joseph D. Murphy and Kenneth E. Wischmeyer were the successful architects out of a field of forty-two entrants





Perspective, Sections, and Elevations of the winning design by Joseph D. Murphy and Kenneth E. Wischmeyer, Architects, in the competition for the reconstruction of the Municipal Theatre in St. Louis. See news pages for Jury report and other details about this competition



A house in which the outward forms are based on Early American precedent but with a plan based on the needs of a contemporary small family. The architect is Matthews M. Simpson of Summit, N. J.

ARCHITECT AS ARBITRATOR

BY LEO T. PARKER

THE law is well settled that where parties to a building contract designate an architect and authorize him to determine questions and disputes which may arise between the parties, such contract is valid and enforceable. Also, a clause in the contract is valid which stipulates that the architect's determination shall be final and conclusive, and the parties are bound by his determination of those matters which he is authorized to determine, except in case of fraud, or such gross mistake on his part as would necessarily imply bad faith or a failure to exercise an honest judgment. For higher court cases which uphold this general law see *31 F. (2d) 820; 281 U. S. 760; 290 U. S. 640.*

The reason contracts of this nature are looked upon by the courts with favor is because it is to the interest of all parties that these disputes be promptly determined and by someone having special knowledge of such matters and who can act upon personal knowledge of the controlling facts. With this decided and well-recognized usefulness, if not necessity, for such arrangements in construction contracts both the property owner and the contractor are benefited.

What Is Fraud?

As to what is fraud, on the part of an architect, which will enable either party to the contract to avoid being bound by his decision depends upon the circumstances of the particular case. Obviously, if an architect performs any act with actual intentions of defrauding either the contractor or the property owner such act may be relied upon to invalidate the architect's decision.

On the other hand, when a contractor and a property owner enter into a contract making the decision of the architect final and conclusive they must abide the consequences of any *honest* mistake made by the architect. In other words, if the architect makes a mistake that may have been made by other architects, who are experienced and competent, the contractor and owner both must accept without complaint the ensuing consequences. However, if an architect makes a mistake which is the result of gross negligence and such mistake would not have been made by other experienced, prudent and competent architects, the owner and contractor are not bound.

For example, in the leading case of *Mayer v. East Side Company, 130 Ore. 341,* the court stated that many courts have defined the kind of mistake which will justify an impeachment of the architect's award. These mistakes are "palpable mistakes," "a mistake so clear that it implies bad faith," "evident mistake," "a clearly proven mistake," "a failure to exercise an honest judgment," "arbitrary action," etc.

Therefore, if the architect fails honestly to exercise his judgment, or makes such gross mistakes as to imply bad faith, his decision, report, certificate, or opinion is not binding on the parties to the contract. Also, an architect may be disqualified because he is financially interested, as a stockholder in the building being erected by a corporation. *American Surety Company v. Shaw, S. W. (2d) 47.*

On the other hand, the mere fact that an architect is in the employ of one of the parties, and acts for him, will not nullify the architect's work as an umpire under a construction contract, if his final conclusions appear to be the result of an honest exercise of judgment. *Southern v. Marsch, 45 F. (2d) 766.*

In order that an architect's decision shall be invalid, it must be proved that his interest was such that the decision rendered by him was profitable to him and under such circumstances that an average and competent architect, who would not profit, would have rendered an adverse decision.

Unreasonable Contracts

Any contract which, on its face, is unreasonable is void. The courts hold that public benefit and ordinary policy demand that contracts of this nature shall be held void.

For illustration, in the leading case of *McCullough, 71 F. (2d) 17,* it was shown that a corporation entered into a construction contract with a general contractor by the terms of which the contractor agreed to perform certain well defined construction work for an

agreed compensation. In this contract one of the corporation's architects was constituted "an umpire to decide all matters arising or growing out of this agreement." The contract further provided that the purpose of this provision was "to prevent all disputes and misunderstandings in relation to any stipulations, or in reference to any of the specifications and plans made a part thereof or their performance by either of said parties."

The contract specified that any and all decisions rendered by the architect were "final and conclusive between the parties hereto."

When litigation developed over the validity of the contract, the higher court held the above provisions valid and enforceable. However, another clause in the contract was held invalid which provided that both the corporation and the contractor "waive any and all right of action, suit, or suits, or other remedy in law or otherwise, under this agreement, or arising out of the same." This court said:

"It is common knowledge that arbitration provisions of this character are almost universal in construction contracts to prevent the harassments, delays, and losses likely to result to some or all of the parties thereto, arising from differences occurring during the progress of the work . . . . We cannot believe that the parties here had in mind that arbitration would be undesirable if decisions thereunder did not bar legal remedies. The waiver was intended to add effectiveness to an award or decision, but the declared purposes of the entire provision were made highly effectual without the waiver clause."

Law of Estimates

Various courts have held that when a contract provides for measurements and estimates by an architect as a basis for settlement, and payment is made thereunder upon a final estimate, there must be some evidence of mistake, bad faith, or fraud before the determination of the matter by such architect can be held void.

In fact, in one late case *(280 Pac. 398)* the higher court held that mere errors or mistakes on the part of such an architect with regard to the kind, class, or quantities of materials excavated by the contractor are insufficient to warrant a court in vacating and setting aside his decision. This court said:

"There must be a fraud, or such gross mistakes which necessarily imply bad faith, or the failure on the part of such architect to exercise an honest judgment with regard to such matters. The mistakes must be so gross as to clearly indicate that such architect has acted consciously unjustly in the discharge of the duties imposed on him, and has thereby violated the rights of the complaining party."

In another case *(309 Pa. 1)* it was shown that a contract between a property owner and a contractor provided that no money shall be payable except upon the certificate of the architect, or upon his written acceptance, or payments shall be made upon estimates furnished by the architect. The court held this contract valid since the testimony proved that the architect acted in good faith and honestly endeavored to render reasonable decisions.

In another case, *4 S. W. (2d) 636*, a certain building contract provided that payments shall be made upon the certificate of the architect as the work progressed and full payment upon the issuance of the final certificate of the architect. When a controversy arose between the owner and the contractor the court held that the issuance of the final certificate by the architect is conclusive upon the parties as to the performance of the building contract. This court explained further that in order that a certificate of this nature be valid, the architect must have exercised an honest judgment, and any fraud or want of good faith on the part of the architect renders the certificate void. This court said:

"The law is well settled that when a contractor sues the owner for money due upon a contract of this character, it is incumbent upon him, in order to recover against the owner, to plead and prove that the architect has issued to him a certificate showing his right to the payment, or that such final certificate has been withheld by the architect fraudulently, or that his withholding thereof was so arbitrary as to amount to bad faith, or that the owner has waived his right to insist upon same."

Cannot Reverse Decision

Frequently, construction contracts contain clauses intended to authorize an architect to determine whether or not a contractor shall be penalized for delay in completing the construction of a building.

For example, in one case, *Mittery, 73 Ct. Cl. 341*, it was disclosed that a construction contract contained a clause which specified that an architect should decide whether a delay was "unavoidable" and relieved the contractor from liability. The court upheld the validity of this contract, and said that the architect could not, after rendering this decision, reverse it nor could the owner or contractor name another arbitrator.

House for Thomas M. Russell at Middletown, Connecticut. Prentice Sanger, Architect—Paul F. Watkeys, Associate Architect and Delineator

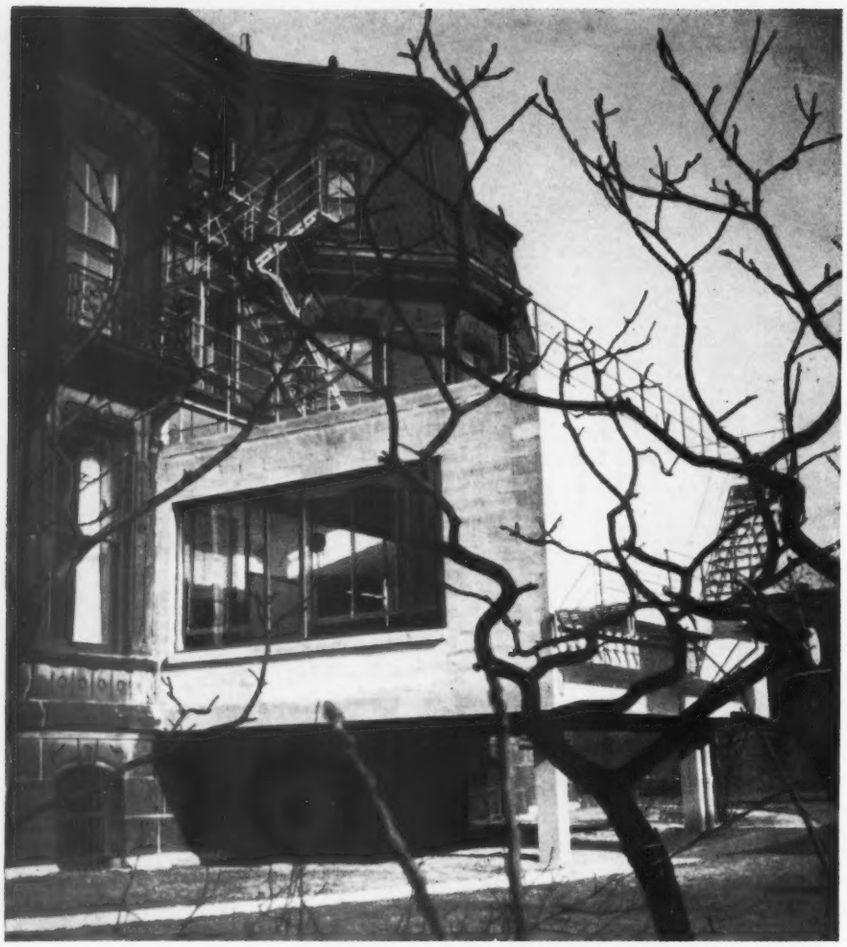


Photo by Herbert Matter, Courtesy Magazine of Art

MUCH OF ALL *architecture belongs to—"a class which is neither good nor bad, and which calls for neither praise nor blame, and in which one searches in vain for any personal thought or music."*

Two schools of architecture, the new Bauhaus in Chicago and the one at M.I.T. in Cambridge, are to be housed in buildings which are distinguished if only for being bad. Can anything be worse than the affront to architectural relationship shown in the illustration of the Bauhaus appendage? Except perhaps the affront to the intelligence of the future alumni of "Tech" in the new "order" which is being built there.

One may well question the qualities of creation which will be inspired at either place.

The one is evidently to be guided by an uncompromising insensitiveness, while the other has only an æsthetic sham to offer.

Negation plus!

RALPH WALKER

NEGATIONS

BY RALPH WALKER, F. A. I. A.

OUTSIDE my window there is Spring carelessly throwing colors about and positively asserting, as it does each year—"Forget the past, think only of the present."

A spray of white cherry blossoms breaks against the brilliant red of the maples, while just beyond there is the vivid green lace of the willows. The Spring warmth germinates the desire for a new beauty.

I have been concerned for some time with the drab present of the new Spring in architectural education, for with all the fair printed words the new *vision* has still much more of the tinge of Winter than it has of true Spring.

It much more resembles fruit stored away for the Winter, its rosy skin slightly corrugated and a canker of negation at its innards.

The following from "Modern Building," by

Walter Behrendt, just doesn't seem to make sense in a teacher: "*Greatness is denied in our time not only to architecture but apparently to all art. To the modern architect the opportunity is denied of working under the fostering favor of an authoritarian and firmly established order. Living at the border line between two eras he is faced with the problematical conditions derived from a total crisis of order. And owing to the uncertain character of the times, the task of the architect is not only difficult, it is indeed in many cases beyond the practical possibility of a final solution.*"

It seems to me that teachers should endeavor to inspire and look for possible greatness. Surely negation in a teacher mitigates against his ever giving learning to others.

Here are remarks indicating another type of negation; remarks explaining the absence of refinement in the work of the new architect: "*His power of imagination, his vitality, have been absorbed so far by the creative effort towards a new understanding of space, by his research into the integral elements of our new conception of design, and by the struggle of coming to terms with the machine.*"

Here the stressing of a revolution is the important thing, and if in the revolt the acquired refinement, the qualities of sensitive culture which man has slowly made his own through forty centuries is lost, the new heaven is worth it all, for the intellectual will be pleased—"by surfaces, ribbed, corrugated, punched, spotted, mottled"—but no others, especially if they are made by hand. For the "ribbing, the corrugating, the punching, the spotting, or the mottling"—must be done by something called a machine. If by any chance they are done by hand, they immediately lose any meaning to our civilization. We might call all this a positive negation.

Both the above ideas are quoted from two exceptional and brilliant men, more than welcome to America, who, if they can release in our youth that which America needs so much —i.e., more rather than less refinement, more rather than less sensitive reaction to beauty—will be doing us a great favor.

The American architect has helped to develop all the standards in Sweet's Catalogue. The American bathroom and kitchen equipment just didn't happen exterior to the architect's wishes. Standardization has for years been a common factor in American life, and where it is related to buildings the American architect has aided and encouraged it.

But our towns are ugly because we lack a sense of proportion (and a similar lack has recently shattered Europe)—a lack of proportion due to a loss of individual dignity and initiative, and a willing desire to want to get something for nothing.

Whether we use in our architecture a sheet of glass as large as the factory can produce is relatively unimportant. Whether we restrict all our building to steel and concrete, or to any materials of mass production, is less important still.

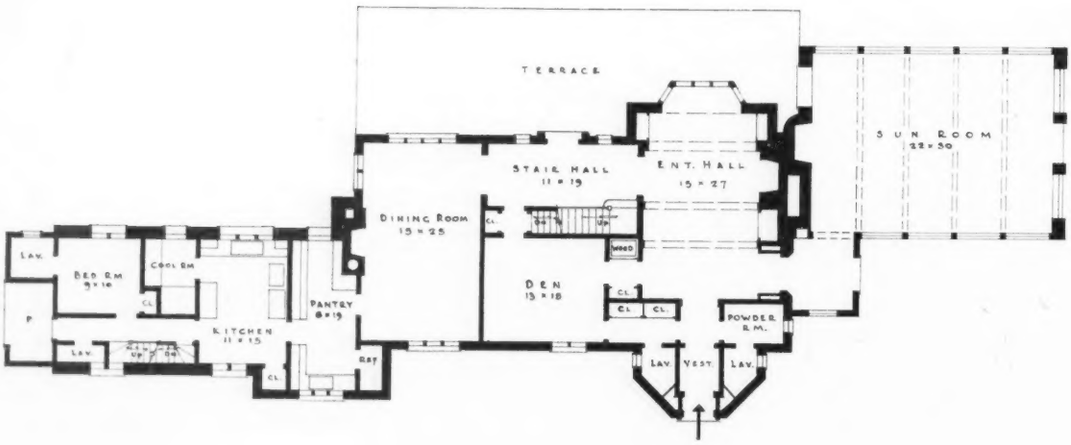
The teachers of youth must teach proportion in relation to human needs. If teaching means a few restricted ideas of defeatism, i.e., the suggestion that greatness is not for this generation, or that anything dealing with good building is beyond the practical possibility of a final solution, or that they only have the strength to struggle with the machine, our American youth will have had a disfavor rendered it.

Youth should be told to experiment with everything that has been and has to be done. Youth should be told that no solution is final, but that for every generation a solution can be found if men of good will attempt it.

Even with ornament there may be a solution, if anybody has the courage to experiment with it. And if, in its use, the poor world becomes confused—well, what of it? —for the poor world to date has stood for a great deal of ugly confusion in the name of the machine.

Architecture is for the service of man—his sense of structure, his sense of need, and his sense of mental and physical pleasure, which are not independent but are closely related.

Residence for Richard Sellers, Esq., at Wilmington, Delaware. Prentice Sanger, Architect—Paul F. Watkeys, Associate Architect and Delineator



RETREAT FROM THE NINETEENTH CENTURY

BY ROBERT L. ANDERSON

EDITOR'S NOTE: *The series of philosophical discussions by Mr. Anderson, begun last October, was interrupted in May in order to confine that issue to New Orleans and the A.I.A. Convention. The author's objective in these short articles is to clear away, if possible, the confusion of architectural thought that has resulted from misinterpretation of the changes that have been taking place in the world outside architecture.*

THE thesis of these discussions, it will be remembered, is that contemporary architectural criticism became confused as a result of conflict between the 19th century Religion of Art and the 20th century Religion of the Social Ideal. Having reached the half-way point in the development of the thesis, it perhaps is wise briefly to review the substance of the first half of the argument before proceeding with the second half.

The 19th century Religion of Art is, of course, no more than a convenient phrase summing up that intellectual deification of Art which occurred in the interval between the latter part of the 18th century and our own time. It was, as I have tried to indicate, a many-sided deification. Initiated by the Romantic reaction against the 18th century Age of Reason, it was nourished by those who found in æsthetics a congenial substitute for the traditional Christianity in which they could no longer quite believe. It was made intellectually respectable by philosophers like Hegel, Schopenhauer, Nietzsche, who placed æsthetics on equal footing with philosophy and religion. Its ancient origins had been discovered and codified by archæologists and historians. The final apotheosis occurred when, as the "expression of society," it was received into that evolutionary heaven which was the special creation of the 19th century.

* * *

There are, however, certain grave difficulties inherent in the doctrine—art is the expression of society—with which the 19th century Religion of Art reached its apogee. In the first place, it is only partly true. Art is an expression of society to people interested primarily in society and only secondarily in art. The natural tendency of such people and such doctrine, therefore, is to magnify those art forms which betray evidence of their social environment and to minimize those which fail to yield up such evidence.

This difficulty in turn leads to the second objection to the doctrine of art as social expression. It is a doctrine not visually or audibly, but intellectually conceived. No building, or sculpture, or painting, or musical composition by itself can offer evidence of its social origin. It is true, of course, that after one has read a book describing the social conditions which existed during the time a particular work of art was produced, one can listen to, or look at the given art form and comprehend how it can be said to reveal the social environment in which it was produced. But this happens only after one has first read the book.

For instance Dr. Gropius, I venture to believe, could never have understood that an oriental carpet narrated the history and religion of nomadic peoples simply by looking at the carpet. He could understand it only if he had first read a book which discussed the history and the religion of nomadic peoples as well as their carpets.

One should, of course, read such books. Yet because he has read them, Dr. Gropius has been led to misunderstand completely, I think, the continued appeal of oriental carpets. They appeal to us not "because we sense (their) creator's harmony; a harmony which we, ourselves, have lost," but for the simple and unsophisticated reason that they continue to delight our eyes with their pattern and color.

Nor am I convinced that this more naïve approach to the carpets is not, in the final analysis, the most desirable approach. Not that I doubt that the reaction experienced by Dr. Gropius in observing oriental carpets is of a much higher nature than that experienced by the average person who has not read the many books Dr. Gropius undoubtedly has read. But should not one endeavor to keep the history

and the religion of nomadic peoples within the covers of a book; their gorgeous sense of beauty within the color and pattern of their carpets? Why, in looking at oriental carpets should contemporary men insist on seeing historical and religious facts instead of seeing color and pattern? If the acquisition of intellectual ideas mean that we can no longer appreciate color and pattern as such, it is high time, I think, we ceased reading books. Think of the loss had nomadic peoples read books only to become color and pattern blind. Who, then, would have been capable of creating the carpets? Who, if we continue to insist that art is a matter of ideas, is to produce the carpets of today?

It has been suggested, I believe, that architects should "throw away their libraries." That is, that they should throw away their libraries of historic forms.

Possibly this should be done. But I venture the opinion that the first library architects should throw away is the library of the 19th century philosophical and socio-historical ideas.

The famous formula which Louis Sullivan advanced was "form follows function." There is distressingly little development of this formula of form in *Kindergarten Chats,* however. Can anyone who has read them deny that the real formula of the *Chats* is: "behind the form lies a socio-philosophical idea"?

Now it was the first formula which enabled architects to create fresh architectural forms. It was this formula of form which enabled Frank Lloyd Wright, for instance, to design the celebrated "dendriform columns" of the Johnson building; columns which, when photographs were shown my colleagues of the engineering faculty, created a furor of admiration for the æsthetic development of a structural principle with which they were thoroughly conversant. Mr. Embury's bridge anchorages in the February PENCIL POINTS, I might add, created the same furor of admiration for the same reason.

Unfortunately the second formula—*behind the form is an idea*—drove architects to writing books and pseudo-philosophical criticisms which practically nobody can understand. It was this formula of ideas which is responsible for all those quotations from Thoreau and Whitman which were sprinkled so liberally over the pages of the January *Architectural Forum;* quotations which, while they reveal a great deal concerning the personality of Mr. Wright and his literary preferences, explain next to nothing about his created buildings.

Architects, in truth, should throw away their libraries. That is, they should throw away their philosophic, literary and social libraries. As individual members of society they should hang on to them, to be sure. But as architects they should scrap them at once. Henry Robert Harrison's pocket definition of creative architecture — BEHIND THE ARCHITECT, THE PHILOSOPHER—which appeared in his discussion of Richard J. Neutra in the July, 1937, PENCIL POINTS should be buried where it belongs: in the 19th century.

The third difficulty with the art-as-social-expression doctrine is that it faces the past rather than the future. It is at once excessively retrospective and insufficiently prospective. It operates exceptionally well for philosophers, historians, and critics who are examining civilizations of the past. Which is not surprising. For it was such men, engaged in such activity, who produced the doctrine.

It can operate for the creative artist in any contemporary society which is firmly established. For the principles on which their society rests having been established, artists can then utilize them in establishing the principles of their art.

The doctrine works most disastrously, however, when society is in a state of flux. Society is in perpetual flux, to be sure. But seldom are men as acutely conscious of such facts as are contemporary men. It is when men who believe that art is the expression of society believe as well that their society is in flux that the doctrine breaks down. For then they are compelled to announce, as did Dr. Gropius, that for them great art is impossible of achievement "because (their) social structure is still in a state of transformation."

Nor does Dr. Gropius stand alone. A similar announcement appeared in The Nation not so long ago. The essential point is that such an announcement cannot fail to appear so long as contemporary men try to proceed upon the theory that art is primarily the expression of society.

For my part, I have made my retreat from the 19th century. It is now several years since I ceased attempting to educate architectural students in the notion that their art expresses their social environment. One hundred, two hundred years from now, an historian possibly will be able to demonstrate to their great-great-grandchildren that it was, in some small measure, true. For the present, however, they would do well to forget it.

THE THRESHING FLOOR

A SECTION DEVOTED TO BRUTAL FRANKNESS

EDITOR'S NOTE: *All is not well with the world in general and the architectural world in particular. As we go our rounds we hear many architects giving voice to dissatisfaction with conditions. They speak right out in conversation and have vigorous ideas as to what is wrong with this or that. Sometimes they have constructive suggestions to make, sometimes not, but there seems to be agreement that the profession has problems to solve and that open discussion of these problems will be beneficial. This department is an experiment, designed to furnish a place for frank debate. So, if you feel strongly about some matter of general professional concern, here's your chance to relieve your feelings and perhaps stir some of your brother professionals to do something about it. Or if you disagree with anything in articles we print you can put your arguments before the same audience. Anything short of libel will be acceptable so long as it has bearing on the welfare of architects and architecture. Let's hear from you.*

MORTIMER E. FREEHOF, *Architect, of 415 Lexington Avenue, New York, leads off this month with some remarks that should strike a spark or two.*

HERE is a condition which threatens oblivion to the capable, conscientious architect of modest practice. It is not made up of exceptional cases, but applies in the majority of current building operations. It should be common knowledge, yet is not even mentioned among all the discussions in architectural periodicals. The writer feels that it should be publicised widely, faced squarely, and strongly combated by the Profession.

The scant activity of recent years has made existence difficult enough for the architect. Actually, there is a goodly amount of construction work constantly in progress. The fact that by far the greatest bulk of this work goes to cut-rate practitioners makes the situation much worse than need be.

A check up on the work in New York City shows clients in every borough except Manhattan employing architects at fees so low that one wonders how even barest drafting costs are covered. The result is the creation of a set of conditions which breed moral and legal dishonesty and tend to indict the entire Profession both as to ability and integrity.

The client thinks he is effecting an economy by shopping for his architect and chiseling the fee. Actually, his expense is infinitely greater. It is swelled by higher construction cost due to insufficient consideration of materials and methods and lack of supervision. It is increased by excessive maintenance and repair bills resulting from bad execution. Income is reduced because of poor planning. Finally, there is often the additional expense of graft to the architect, with all of its attendant evils. The total cost would have enabled the client to employ a good architect. The amount of work so awarded would enable competent men to continue in practice. In justice let it be said that a small percentage of this work is done by good men who meet cut-throat competition out of desperation, and then go into pawn to pay their costs.

To be more specific, it is the custom for speculative builders to purchase plans of six-story apartment houses at a cost of about five dollars per front-foot of building. For a one hundred foot building the architectural fee is approximately $500, or one-quarter of one per cent of the cost. The architect makes a sketch of a typical floor plan, superficially studied, and rushes into working drawings. There are no details, and such specifications as are wanted, if any, will state in effect that all plumbing work shall be done with pipe. When the plans are approved in the building department, the services are completed.

There is no supervision, but occasionally the client (who is also the builder) wants the architect to solve some tangle on the job. To augment the fee, often there are rake-offs from sub-contractors, commissions from concerns whose products are incorporated, and compromise deals on the job when visits are requested. If occasion permits and the client is gullible, it is sometimes alleged that a cash consideration must be distributed among department officials for special concessions to save construction costs. In such case, the lion's share of the gratuity goes to the architect. When the client is not a "builder" (most speculators are really promoters), another method is possible. The architect proposes sub-letting the work for the owner. This is a perfectly ethical procedure when properly administered, but a bonanza for the unscrupulous. Under this system, many of the concerns employed pay the bargain-rate architect a percentage of the contract amount before he signs. In some cases the contractors lose on these deals. Mostly, they know in advance what is expected, the honorarium is added to the estimate, and comes out of the client's pocket. When there are specifications, another method is the designation of parts of the work by description which excludes fair competition. Inasmuch as there may be perfectly sound reasons for such exclusion on occasion in the best interests of an honest job, this method affords ready opportunity for extra-mural commission.

These are bold accusations. Their authenticity can be established by interrogating any group of sub-contractors selected at random in Brooklyn, Queens, Bronx, or Richmond, as well as in many communities outside of New York City. No third degree will be necessary. It is so much the accepted standard of customary procedure that most subs in these localities ask advance information as to the amounts to be included for this purpose in their proposals. "Of course, the architect has to get his!" In most instances where an architect is not receptive he is considered a novice, lacking in acumen. Indignant censure invariably results in protestations that all architects do it and that if subs don't follow the rules they don't get the jobs.

One result of these prevalent low fees is that they establish flat rate charges based upon speculative work,

and applied as well to private and institutional work. Individuals building their own homes pay fees commensurate with the rates on speculative row houses. If they have had no experience they are advised by operators and real estate brokers as to what they should pay architects. Communal and institutional committees are made up, mostly, of men who have been building for speculation. These men buy plans at apartment house rates which they believe applicable generally. There are a number of recent cases in Brooklyn alone where complicated hospital jobs were awarded on a basis of less than one per cent of the cost. This fee included engineering services. In most instances, steel was designed by the steel contractor, and the mechanical work by the plumber, steamfitter, ventilation contractor and electrician. In cases where conscientious architects undertook the work and rendered anything approaching adequate service, they have left a trail of debt.

Of course, there is no obligation upon the part of self-respecting men to take jobs at these fees. But after years of minor alterations, pot boilers, and scavenger jobs, when opportunity occurs for a sizable and interesting project, there is a natural temptation to accept the proposal offered and to hope for some miracle in meeting the office budget.

It would seem that we have in this condition another variation of the query as to priority of chicken or egg. The clients, made up largely of men whose experience or guidance comes from the speculative field, are educated to a set of low fees. Often they are entirely sincere in their ignorance. The amount offered is all they will pay, and it is all they *need* pay, basically, in order to get a job done. The architects who do this work must meet stern competition or go jobless. It is all they can get under the circumstances, and it is all they *will* get while there are even a few practitioners willing to work on such arrangement. Most of the work so executed is bad. But the understanding of most clients is equally limited. If a speculator were to erect two similar buildings, one with a bargain rate and one with a capable architect, he might see sufficient difference to convert him to the employment of good men at fair fees. His customary procedure results in acceptance of all conditions of poor design, construction and taste, which he doesn't understand, graft which he either expects or doesn't know about, and building and maintenance difficulties which he has come to believe inevitable. Mostly his buildings stand up, they rent and they sell. These considerations form his yardstick. His architectural deal is placed in the same category as his chiseling with the plasterer or the watchman.

Here is a job for the architectural societies. Individuals can help, but organization is essential. It is particularly noteworthy that some of the members of the local chapters of the A.I.A. are among the worst offenders. To educate the clients is a long process and would seem possible only as a result of establishing a market of higher minimum rates. To educate architects to the tremendous advantages in organized procedure for such fee establishment should not be impossible. Stern methods may be required in some instances. The ultimate good should be sufficient justification for such measures as exposure of graft, boycott of sub-contractors who lend themselves to this practice, and publicising architectural fees as jobs are awarded. Under the new Building Code of New York City, proper supervision will be mandatory. This should tend to require better service and higher fees, but organized policing may be necessary to guard against filing statements of supervision which is negligible. If the newly established City Planning Commission will concern itself with æsthetics some benefit may result. More potent still would be the setting of high standards in the operation of the new Federal insurance program. It might be unconstitutional for a municipal department to require more than structural safety. Where building loans and mortgages are involved it would be very much in order for a competent board of local appraisers and supervisors working with architectural consultants to demand a high standard in housing design, proper supervision, and employment of capable, ethical architects. Doubtless, such policy would instigate rebellion on the part of speculators, but educational propaganda, backed by strict requirements and proper administration, would result, eventually, in an understanding of the advantages to be derived by owner, purchaser, tenant, and the community. Such a program should go far toward and reforming the chiseller, educating the ignorant, eliminating the incompetent and unscrupulous, and bringing to the capable architect the work which is rightfully his.

ALICE WALTON, *Architect, of Athens, Georgia, thinks the profession inclined to neglect its own interests and suggests some definite points for the application of common sense. She says:*

OF ALL classes of human beings who earn, or at least try to make, a living in this world, there is none that gives so generously of soul and substance, is so little appreciated, so misunderstood and does so little for itself as the architectural profession.

A lawyer frequently demands a fee of at least twenty-five per cent for his services, win, lose or draw. If he takes the case on a contingency basis, his fee is fifty per cent. If you are in a very tight place, he takes all you have.

A real estate agent commonly charges you five per cent to sell your town house, and ten to sell your farm, and before he begins charging, he insists that you lower your price of the property so it will make the selling easier for himself. And you pay all incidental expenses, such as abstract, etc.

A loan agent is likely to charge you three per cent for lending you someone else's money, and again you pay all incidental expenses.

But do you ever see articles in the paper written by any of these men, apologizing for the cost of their services, or explaining them? Do you ever see competitions in the magazines or newspapers where different lawyers try to show which one can best solve some legal problem, or giving sample law suits and their solution so people will better appreciate the value of legal service? And learn how to do without lawyers.

Or do you ever see articles by real estate men trying with might and main to explain to people how to close a sale and to dispense with the service of real estate dealers?

But architects! These suicidally benevolent creatures! Always on the alert to embrace some movement that will lessen their own incomes. Right now the whole world is violently interested in the small house. Good salesmen have discovered that more people can build small houses than large. And how does the architectural profession meet the issue? By staging competitions that solve almost every imaginable problem of planning for the benefit of any carpenter that wants to copy and every customer that wants to "save the architect's fee"; by forming groups to make complete house plans in their slack time which can be sold to people at a fraction of their value, through an agency, so they can have the benefit of architectural service without paying for it. All in the sacred name of education of the public taste.

Educating the public to appreciate a thing, my dears, consists in making it difficult for them to acquire it, not in cheapening it. Cheap being the word that means everything despi-

cable in the minds of a people to whom Mammon is the one and only God whose reign has never been threatened.

Then the registration of architects. What has the profession done to acquaint the public with the significance and value of this. Just about nothing. They have made it difficult to be able to call yourself an architect, but they have done nothing to make it difficult for any carpenter to plan and build houses, apartments, hotels and any other building he wants to.

I know one young man of extraordinary ability as an architect, especially in beautiful design, but he had to take the state examination three times in order to pass some trick question in engineering, while all the time the town where he lived was being plastered with the most shoddy and contemptible examples of building by the shoddiest of builders. They had no difficulty whatever about practicing what they were pleased to call architecture.

And do the architects refuse to allow builders who furnish plans to figure in their offices. They do not. And do they refuse to patronize the lumber companies who maintain a "free architectural service" which costs five times what it is worth? They do not.

And the F.H.A. loans so happily and eagerly advocated by the architects. What do they do about the contractors and lumber companies who falsely claim to be able to get these loans through when the owner himself could not do it. Nothing at all. Only this morning I read a half page advertisement from a local bank, appealing to contractors for business and promising all sorts of help and financing if they would put their F.H.A. loans through this bank. But not one word about helping architects.

These loans originated, I know, in an abortive effort to stimulate building after the building public had been so thoroughly frightened they retired into their holes and pulled the holes in after them. But is the architectural profession getting much real benefit from them? Always the contractor is favored. More than one man has said to me that the inspection of these buildings must be very sketchy and overlooking, for if it is too careful, the contractors will start fighting the F.H.A. loans and the loan men will be out of pocket.

If the architects are to survive, it is not by the way of giving the public what it wants in the way of cheapness, but of making the public want what it has to give so badly that they will pay for it. This will be difficult, desperately difficult, but the motor car industry did it and we can, too. And since the universities keep on pouring out their annual floods of potential Wrens and Michelangelos, it would seem to behoove some one to start a little propaganda of salvation, and not the salvation that is free.

CASS GILBERT, JR., *Architect, of 41 East 42nd Street, New York, finds standardization a menace if carried too far, though capable of intelligent application. We agree with him.*

TO THE EDITOR:

THERE has been much discussion about the standardization of buildings and a great deal has been written about it and I wonder whether I could add anything to what has already been said. In any event, I make the attempt.

Over the week-end I went down to Washington, of course going through Philadelphia, etc. There, as around this neighborhood out on Long Island specifically, we find miles and miles of one and two family houses detached or semi-detached but all alike. These vary in age from a year to fifty years, some perhaps even older. In our own New York City we have literally miles of brownstone front houses all identical. Standardization is not new in the building industry. Apparently every generation has tried it and each succeeding generation has cursed the past for having done what it is doing in its own way, to be cursed in turn by the future.

Can we not once and for all get away from the idea of prefabricated and standardized houses, at least so far as exterior appearance is concerned? What is more ghastly than rows and rows of identical houses, four feet between two, ten or twelve feet between the next two and so on; small children growing up to be identical; paucity of ideas; lack of personality. One says to save cost; I doubt the cost saving.

Standardization of individual elements may result in cheaper construction if the designer will think of utilizing sizes. For example, a piece of 2 x 4 for partition work, taking a standard economic length, becomes two pieces with minimum labor if the ceiling height is properly considered. The same applies to joists, studs, rafters and every other wood element, window frames, door jambs, all of these, but to put them all together identically the same way and then set them up row after row, I hope PENCIL POINTS will argue against such standardization.

HENRY J. MURPHY, *of 30 Cowdrey Avenue, Lynn, Massachusetts, disagrees with Aymar Embury on the design of bridge anchorages.*

TO THE EDITOR:

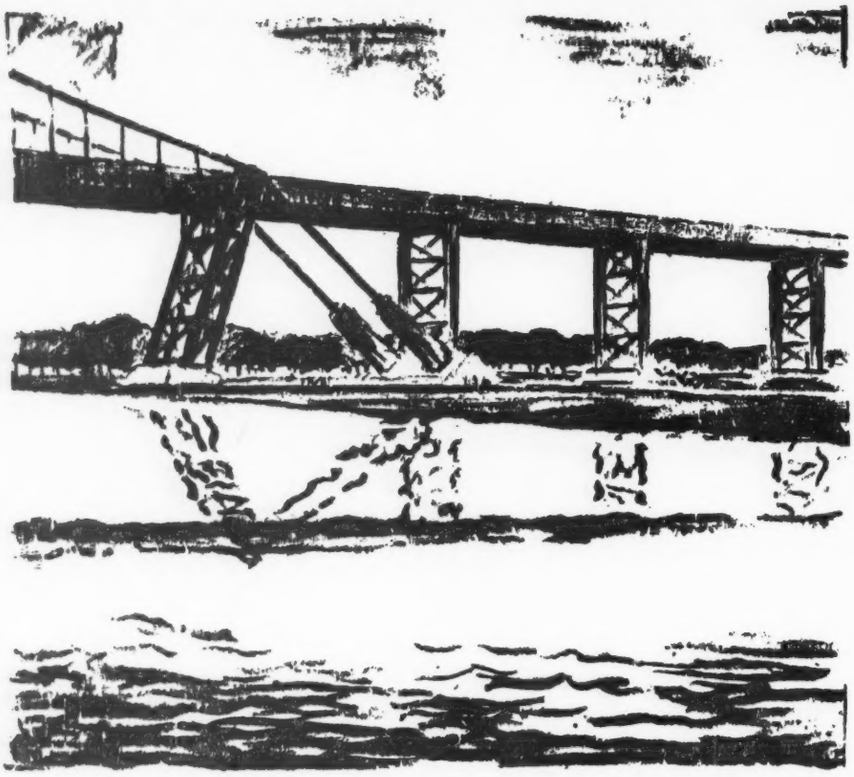
"IF YOU read this letter carefully, you will find words of financial interest to you. Words about something you sell, and I buy.

"In the February issue (page 98) you extend, to readers, an invitation to debate. Does this imply an open season on Mr. Hamlin's flights of thought only? Do you permit cash customer-readers to shoot at any target?

"Here, as a cash customer, I dare assume that the invitation to debate is good on other game; and venture some remarks inspired by Mr. Embury's article on 'The Aesthetics of Bridge Design.'

"This article, it seems to me, is excellent thought expressed in workmanlike English. I have in mind, particularly, the lines (p. 110) following a few words about the Eiffel tower; these lines read, 'It is our belief that more good engineering projects are spoiled by false deference to assumed æsthetic considerations than by any economic requirements. No really clean, well-thought-out bridge . . . . , can be downright bad. It may not be exceedingly beautiful . . . . ; whereas the engineering structure whose function is partly concealed and partly distorted for supposed æsthetic reasons, will inevitably be unsuccessful.' As one who has entertained such thoughts I venture to add my two cents' worth of conclusion; that engineering projects become eyesores because of the addition of Beauty, in the form of masonry or of metal filigree, to a design which should be then, before Beautification, complete in structural steel.

"However; before I float farther on this wave, allow me to point out that in this article 'The Aesthetics of Bridge Design,' the illustrations to the text somewhat confound the teachings of the author. On pages 112 and 113 you print figures 2 and 4, showing the elevation of the anchorage of the Triborough Bridge, and the final design, in concrete, 'intended to express action of forces within the several distinct masses.' Is not this designing of concrete to show lines of stress somewhat at odds with the admonition against 'supposed æsthetic reasons'? The force of this admonition is felt when one looks at the photograph you print, page 119, showing the far side of this concrete anchorage, 'intended to express action,' from which it is quite apparent that there can be no stresses, other than due to tempera-



Mr. Murphy's suggested solution for the Whitestone Anchorage

ture, in this anchorage. It is, perhaps, several hundred cubic yards of concrete pretense. I write 'perhaps,' since it is not entirely clear, from the text, that no more deadweight of concrete is required for anchorage than is indicated by figure 2.

"The necessity for explanation to accompany this anchorage design arises, I feel, not so much from the debatable use of so much masonry, but from the adoption of a defective *parti* for the original design, by both architect and engineer, in which it was proposed that a certain part of the structurally sound, complete steel frame, should be hidden by masonry. This *parti,* the commonplace one in bridge design, is defective, I maintain, because it is adopted for none other than 'supposed æsthetic reasons.' Discord, surely, must result from the attempt by any person, architect or not, to concoct a seemingly logical design while using as elements—in the elevation—two systems of construction, apparently supplementing each other, but one of which is used sincerely and which are as far apart in their suggestion of structural application as in their relative, pound for pound, structural capacities. Moreover, the discord, as I see it, in existing architect-designed anchorages of suspension bridges, is proclaimed the louder through the vast amount of masonry, exceeding any structural requirements, which the designer is compelled to use in concealing the far-ranging, if simple, lines of slender steel members; the result being the relegation to a subordinate position, in the design of the anchorage, of that which is the real factor.

"What would I do? Well . . . .

"It is my feeling that in engineering projects which entail the carrying of loads, outdoors, clear of natural grade, and where cost and space preclude an entire masonry job, exposed steel framing should be the sole element in design: this from a horizontal line marking the tops of masonry foundations which would rise, for practical reasons, a few inches (or feet) above grade. In the case of the bridge, it occasionally occurs that the roadway approach can be carried between retaining walls up to the very take-off of the steel span. This is not quite the case which provokes so much of this letter; here there is sincere use of masonry, and of steel; there are no adscititious hunks of masonry glued to a web of steel. But where other considerations, as usually occurs, govern the design of approaches, it is my opinion that from that point in one approach, where the roadway has to be carried by steel framing, to a similar point beyond the main span, all work, above such projections of foundations as mentioned, should be of structural steel.

"Of existing bridges there are few which are not marred by the awkward junction between the steel spans and the masonry-pier carried approaches, masonry abutments or masonry anchorages; unhappy either in the vain attempt to slenderize piers in deference to the slick streamlined steel they adjoin (see the Forth Bridge), or in the deliberate use of huge masses of masonry that might pretend to be as structurally capable, in the anchorage or abutment design, as the steel members they hide. These latter offences against good engineering may be observed in the Hell Gate Bridge (conceived originally, I feel, as an all steel structure) and in the Delaware River Bridge, discussed by Mr. Embury.

"An illustration of my point may be obtained by comparing the accompanying tracing, made over the rendering, on page 119, of the Whitestone Bridge Anchorage, with the design shown in the rendering. The masonry piers are replaced by steel framed columns, and the triangular masonry anchorage removed to show essential steel members of assumed size. As the weight of the triangular block of masonry is computed in the design of the anchorage shown in rendering, it should be considered as provided below grade in my tracing.

"From this letter it might seem that I am of the party which regards the architect, in relation to engineer-projects, as an abatable evil. That is not so, if it matters; but I am among those who are amazed at the apparent inability of some great architects to recognize the relation of Engineering to Architecture which justifies Mr. Embury in considering them as fundamentally the same art; and as much amazed that these great architects can not see that of steel alone, intelligently used, structures can be built as beautiful as ever were of stone alone. The function of the architect as composer must transcend that of the engineer as computer, as definitely as did that of the master builder of the middle ages transcend the function of the master mason, the geometrician, who understood projection.

"The architect, with native, trained, sense of form and line, should know sufficient of easily-learned graphic statics, so as to design, intelligently, the silhouette of the lace which is to be made in steel; should know a little of theory of structures so that he could understand why the airiness of lattice must give way to the solid-seeming plate and angle; and should believe, I say it, that the exposed steel frame is the sole heir of the Gothic form, all other modern forms, of whatever facial resemblance, being, not bastards, pretenders merely."

CARR WHITEHEAD, *Draftsman, of 2146 West 108th Place, Chicago, Illinois, finds a challenge in the writings of both Talbot Hamlin and Robert L. Anderson.*

TO THE EDITOR:

THIS is a response to your invitation to submit comments on the writings of Prof. Hamlin and, incidentally, of Mr. R. L. Anderson. So, a draftsman goes literary.

To the struggling young draftsman, who takes what he can get, when he can get it, these discussions of Prof. Hamlin are very idyllic and entertaining. Perhaps I should show more appreciation of their intent—they are stimulating to the mind and give one new approaches to the matter of design. If only we could find a client who would entrust the solution of his problems to an architect—and when I say entrust, I mean entirely so. No imposition of pre-conceived ideas which are unintelligent of the purpose just because they've seen a miscarriage of design somewhere and they must have it. Unfortunately the number of clients who instruct the architect how to solve the problem far outnumber those who understand the architect's purpose and possibilities.

And now I wish to bicker with Mr. Anderson in adopting the view of Prof. Hamlin's first article, unless Prof. Hamlin intended it to be so literally taken. I feel character definitely has a place in a building: the expression of the nature of the building's purpose. A restaurant should not assume a fur shop's front, neither should a garage seem like a fanciful ice cream parlor. Nor should the church, which should smooth the layman's unsteady temper, appear as cold and forbidding as a car-barn. You'll probably notice these examples are not quite as monumental as the court house or post office, or state capitol building. But, how in heaven could a pattern of windows, panels, bands, sculpture, *et celery,* interpret to the layman the function of a criminal court, a hospital, or any building where we mortals mess with more than simple duties? It would take more genius than a dozen designers of stained-glass windows to tell such a story, and that art has reached its culmination long since. I might be encouraged into a literal approach—in view of the intricacies and confusion of a great number of our "public service and benefit institutions," I would hesitate to explain too fully their actual methods and purposes. It would prove slightly embarrassing to the layman, I believe, to flaunt so openly before him his self-centeredness.

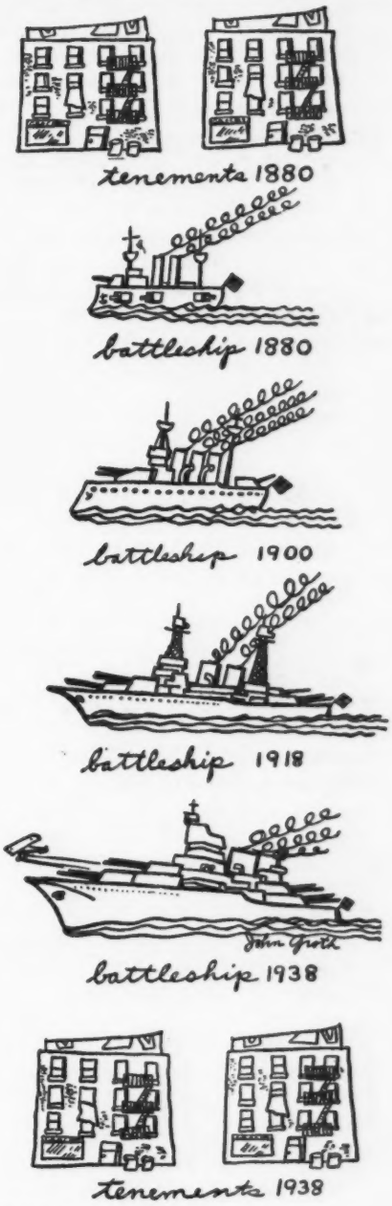
But, Mr. Anderson, in your article, you very neatly requested the architect to revert to the arts, from which field of abstractness we have just emerged. Why shouldn't an architect be interested in the social and civic affairs of his community. How else can he plan sensibly unless he knows the reason and aim of those commissioning him to plan? I'm certain that the more I see the present buildings and their architects' approach to their design, the more I feel that the whole approach to better building was due to an interest in what went on inside and how it might be bettered. Wherefore all the consideration of expression of light and space—of comfort and convenience—to say nothing of function and beauty to boot. Don't revert us to the shirt front era, where the rest of the shirt is loose and drafty. There's enough of that floating around now.

To change the subject, how about a few ideas or suggestions for the small architect who is struggling with the small house? We want to use intelligently the materials we have at hand, to plan more sensibly, to discard the load of freaks we see everywhere, and get out of our attics onto our sunlit terraces. We want to give the home-needer a spacious one, familiar in feeling, and not the Englishesque or gilt-window hamburger stand. So, as I ponder and work on the small house, I feel there is a real problem there, more than just building as cheaply as possible. If I may be allowed one small comment on F. L. W.'s "Falling Water" — how can the layman distinguish at first glance (which is what 99% of the people do to architecture) that it is a comfortable house they'd really want themselves? To me the problem is to use our present materials and methods to give a family a home that is shelter *à la 1938* and will prove to the world at a moment's notice that this family has a real house, not a skeleton, not a resurrection, not a fantasy, but a place to encourage familiarity.

I realize fully that education of the people to the "better things of life" is good, but they've taken too much under their wing, and want a $15,000 house for $9,000, which no one can give them. If they would discard their impressions of English chalets-on-the Wabash, the Spanish Hacienda in two feet of snow, or the "salt-box" bursting with dormers, they could have a modern home, simple, well planned, and still have it harmonious with the family life.

What have these erudite gentlemen, Prof. Hamlin and Mr. Anderson, to say about this? No doubt it would be pro and con, whichever side the other took!

58 YEARS OF PROGRESS



Reprinted from the New Republic

AARON G. ALEXANDER, *Architect, of 867 Mansfield Place, Brooklyn, N. Y., discovers an interesting reaction by the young generation to matters of architectural character.*

TO THE EDITOR:

I HAVE followed, with a great deal of interest, Mr. Hamlin's articles and I should like to relate an experience I had with his first article.

During that month, I was invited to give a short discourse on architecture to a group of high school students. Having a daughter of high school age, somewhat artistically inclined, I fully realized that the generation of today has many definite ideas as to Modern Architecture. Therefore, instead of lecturing, I held

a sort of forum during which I introduced Mr. Hamlin's illustrations.

Personally, I am on the fence as to what really constitutes Modern Architecture but realizing the present generation will carry on the future trend of architecture, I decided to find out what reactions these young people had toward our so-called "Modern" Architecture.

Therefore, I asked this group to study Mr. Hamlin's three illustrations and tell me what they thought these buildings symbolized. It was hard to believe but not one of them answered correctly. Two of them thought Corbett's new design for the Tombs was a hotel; the others, anything from hospitals to office buildings.

This seemed to me to be in keeping with Mr. Hamlin's contentions. However, after I advised them that the designs were court houses, the discussion as to the architecture was anything but in accord with Mr. Hamlin's thoughts.

Their opinions were that—granting the dome effect, columns, large windows, etc., may make the plan and use apparent—it did not hold true as a necessity in this day and age. They seemed to feel that with steel construction, air conditioning, artificial lighting, etc., a building did not have to be designed to show its use.

I, therefore, concluded that the younger generation studied a building more from the mechanical than the artistic end. It was surprising to find many of these students so well-informed in such matters as air conditioning, soundproofing, lighting, acoustics, etc.

In closing, may I compliment Mr. Hamlin on his second article, on the possibility of a definite American Architecture coming out of this maze that we are going through. Mr. Hamlin's third article on Mr. Frank Lloyd Wright's edition was very grand, as frankly when I finished Mr. Wright's issue of the Forum, I was quite confused by the photographs and quotations, but now it is "much clearer."

The Hoffman house and the Johnson Wax Company's new buildings caught my eye. I believe they are the first pieces of Modern Architecture that I have seen that have a semblance of beauty. However, as to the other houses, I cannot quite reconcile a hexagon, square or circular form determining the way a man should eat, sleep and be merry.

HUBERT G. RIPLEY, *Architect, of 45 Bromfield Street, Boston, Massachusetts, has a word or two by way of reply to Talbot Hamlin's "Program for the A.I.A." printed in the April issue.*

TO THE EDITOR:

MR. HAMLIN'S paper in April PENCIL POINTS is full of constructive suggestions characteristic of his recent critical analyses. While one may not agree with him on all points, the fact remains his utterances are stimulating, provocative.

For example I was a wee bit provoked—not exactly provoked either, only perturbed—at his strictures on the red-tape and "elaborate mechanisms" necessary for an architect to unravel in joining the A.I.A. Doubtless Mr. Hamlin is familiar with the procedure that accompanies this "ritual," but he misses one section of the application blanks which covers the point criticised. First let us examine these blanks *(A.I.A. doc. no. 272)*. They consist of six printed pages. Page one is devoted to information and instructions to applicants, a brief statement that requires no filling in.

Page 2 requires the applicant to state his name and address, that he wishes to join the Institute as an architect, that he knows what the by-laws are and will observe them, and enclose a cheque for admission fee and the first year's dues.

Page 3 requires date and place of birth, whether he is a registered architect or not, education and travel.

Page 4. Professional training and practice, teaching experience if any, and public offices held.

Page 5 requires small photographs of two or more buildings designed by applicant, membership in non-architectural bodies and titles of papers written on architecture or the allied arts if any.

Page 6. Membership in architectural organizations and whether applicant is behind or not in any dues. Two proposers are required to sign the application stating they have read it and vouch for the applicant's honorable standing in their community and in his profession and believe the applicant qualified for membership.

There is no junior membership class in the new by-laws, nor was there ever any "red tape" connected with it as far as I recall. Anyhow it's not worth mentioning as a criticism one way or another. As the purpose of the A.I.A. is primarily to promote architecture, and as it stands for good architectural practice, it is entitled to know something of the character and ability of the members it sponsors.

The applicant is not required to—and seldom does—fill in all the items set forth. What is it that terrifies the young applicant about the information asked for in this simple application blank? Are these questions more appalling than the "red tape" an architect encounters in applying for registration in New York, or Illinois, or Rhode Island? I fail to see anything there that would justify the criticism that a "conservative self-appointed 'aristocracy' of the profession" was trying to keep outside its ranks anyone, young or old, of modest attainments and good character.

Page seven of doc. 272 describes the action on application; by the Chapters, by the Board of Examiners, and by the Board of Directors who do the electing. The Octagon office will furnish Mr. Hamlin with data in regard to numbers of applicants passed on favorably or otherwise by the Board of Examiners. This board in 1936 was composed of Edward W. Donn, Robert F. Beresford, and Frederick V. Murphy, all of Washington and all kindly, broad-minded men of impeccable character and devotion to the profession. The terms of the members of the board are rotating, each serving three years. All members are elected by the Board of Directors, and during my three years membership on the board (1934-1937), many names came up for final action—the exact number may be had by applying to the Executive Secretary's office—and my recollection is that not more than two or three failed of election.

Mr. Hamlin suggests that, following the R.I.B.A. procedure, all registered architects should be eligible for Institute membership without further examination. As a matter of fact, with certain limitations, they are. It must be borne in mind there are 36 or more states which have 36 or more varieties of registration laws. The requirements for registration vary in different states. Some are "satisfactory" and some are not. On page seven of doc. 272, under the heading "Action on Application by the Board of Examiners," para. 3 reads as follows:

> "If the applicant has been examined and found qualified as to his professional qualifications by an official state board whose examinations are satisfactory to the Board of Examiners or if the National Council of Architectural Registration Boards has issued to him its certificate of registration, the Board of Examiners may waive further examination of his professional qualifications."

So you see there's nothing terrifying; joining the Institute is really great fun, not half so hard as obtaining a license to practice one's art in Rhode Island, for example, where a nation-

ally known architect who holds a high office in the Institute has tried for ten months without result to obtain registration. An established architect who has been accustomed to practice in a neighboring State, previous to the passage of a Registration Law there, find himself in a vexatious and anomalous position unless he holds a N.C.A.R.B. certificate. A nationally known architect can sometimes overcome this with a minimum of annoyance, but a younger man who may be a heaven-born genius, if he does not know the "right people" is up against it. The old days of McKim, Burnham, and Burt Fenner—days of glorious memory—whose passing Mr. Hamlin deplores, were stirring times. Life was simpler then and we didn't have 36 or more varieties of registration laws to bog us down. All we really need is *one* National Registration Law, administered by the A.I.A. It was a gallant gesture for the Institute to foster a model registration law, but a technical mistake to try to put it over. As one looks back on it, the Institute should have assumed the prerogative and registered its members as architects equipped to practice, and fostered a licensing law for each state permitting them to do so. Then the title "Registered Architect" would be a crown of olive leaves.

I am in entire sympathy with Mr. Hamlin's frequent references to the R.I.B.A. as a model to follow. When it was suggested to adopt the British Registration Law — permissive, not mandatory — the reply was that it wouldn't work here with 48 varieties of state constitutions. Maybe not, but 36 or more different laws, which all try to accomplish the same end, don't work either. In an attempt to overcome this absurdity, the National Council of Registration Boards was established. That's putting the cart before the horse, attacking the problem by working backward, like first building the roof of a house supported on stilts, and putting up the walls and floors afterwards. It can be done, of course, but it ain't natural.

The R.I.B.A. has several classes of membership, Fellows, Members, Associates, Licentiates, Juniors, maybe others. I don't think the Institute would be averse to adopting certain of these classifications and increasing, doubling, or tripling its membership by the inclusion of all registered architects who can meet the simple requirements set forth in the by-laws. There may be those who are anxious to keep the Institute a selective body, but I believe they are a small minority. There are varying grades of eminence and attainment in all professions and crafts, and architecture is no exception. It is not undemocratic to recognize high achievement. Society needs academies of medicine, jurisprudence, science, art, and a number of things. I believe any architect, be he ever so eminent, or be he ever so humble, who will subscribe to the Institute's principles of professional practice will be welcomed to membership.

When Mr. Hamlin mentions Institute Publications and the Octagon, he speaks wingéd words. Memories of the old journal of the A.I.A. haunt me, too. As the good book says, *Fiat lux*. The Octagon files are open to Institute members; everything, including stenographic minutes, is available on request, but it would be a killing job for anyone, save a superman, to attempt to digest it all. If we might have Henry Saylor and Talbot Hamlin at the head of an editorial staff of a new Journal of the A.I.A., it would be wonderful. Both are doing the profession this service in their respective publications.

Mr. Hamlin is a little unkind when he speaks of the Institute's relations to the Government. An analysis of the efforts of the Committee on Public Works in recent years discloses the establishment of a sympathetic spirit of cooperation and cordial relations never before attained. This has resulted in a noticeable improvement in Government architecture and an appreciation on the part of the Government officials of what the Institute stands for.

There are many problems in this connection as also in the attitude of the Institute to the draftsman that the author of "A Program for the A.I.A." brings up, and to which he adverts with sagacity. There's no doubt that open competition for all government buildings would arouse great public interest and be enormously stimulating to the profession itself. Mr. Hamlin has presented an inspiring, thoughtful paper on the state of the profession.

To the Editor:

It was my good fortune to be alive before the "Bell in Hand" became a memory some 20 years ago. Well do I recall old Dr. Fellows, the Antiquary—he'll be 98 February 29, 1940—sitting at his frugal repast of Brie and Union Ale in the back room, surrounded by longshoremen and scene-shifters from the Boston Theatre. The good Doctor loves the tang of the salt seas and the smell of patchouli and grease paint. He and Halliday Witherspoon were close friends and the longshoremen and the scene-shifters used to sit spellbound listening to their weird tales of catamarans and the Coramandel Coast.

"Strictly speaking," the Doctor was fond of saying as he slowly stretched an arm toward the battered pewter mug, "my life has been a constant struggle to catch up. I'm always behind in multiples of four when it comes to birthdays. If we'd only adopt the Maya calendar and the double-decimal system I'd really begin to live." The remainder of his remarks were lost in a deep gurgle.

I like Leon Keach's philosophy and each month turn eagerly to his column in Pencil Points. His observations on Boston and her quality of mind are pragmatic, wholesome. It's a pity, in a way, he was playing around in rompers when the "Bell in Hand" was in its apogee. That Union Ale might have been good for his psyche. However, that is immaterial now that Hulihan's Ale is on draught in the taverns. That's what I've been coming to, and I regret to say that while it has been available for several months, I tasted it for the first time only this noon.

The first swallow evoked a vivid picture of the old "Bell" with the friendly company sitting around pine-topped tables, mutton pies warming on the cover of the air-tight stove in the middle of the sanded floor, and the cries of the waiters to the ale-drawers as they filled the pewter mugs. The place had the musty smell of spilled malt, tobacco smoke, and carbon dioxide. At nine o'clock each night the proprietor said, "Gentlemen, it's closing time!" A night cap on the house and everyone stumbled out with much talk and scuffling of feet.

Hulihan's Ale is the nearest thing to the old Union Ale the "Bell" used to serve. The Diamond Spring Brewery of Lawrence, Massachusetts, make it, and the reason we never had it in Boston before is because the inhabitants of that favored town kept it all for themselves, I suppose. Hulihan's is reputed to be the strongest ale brewed, dark in color with a creamy white foam, smooth as Euphrosyne's knee. I hope Leon will give it a try.

Ambrose Ganymede II

It is interesting to compare this pen-and-ink sketch by Samuel Chamberlain with his etching of the same subject shown opposite. The sketch is reproduced at exactly the size at which it was drawn; the etching was somewhat reduced

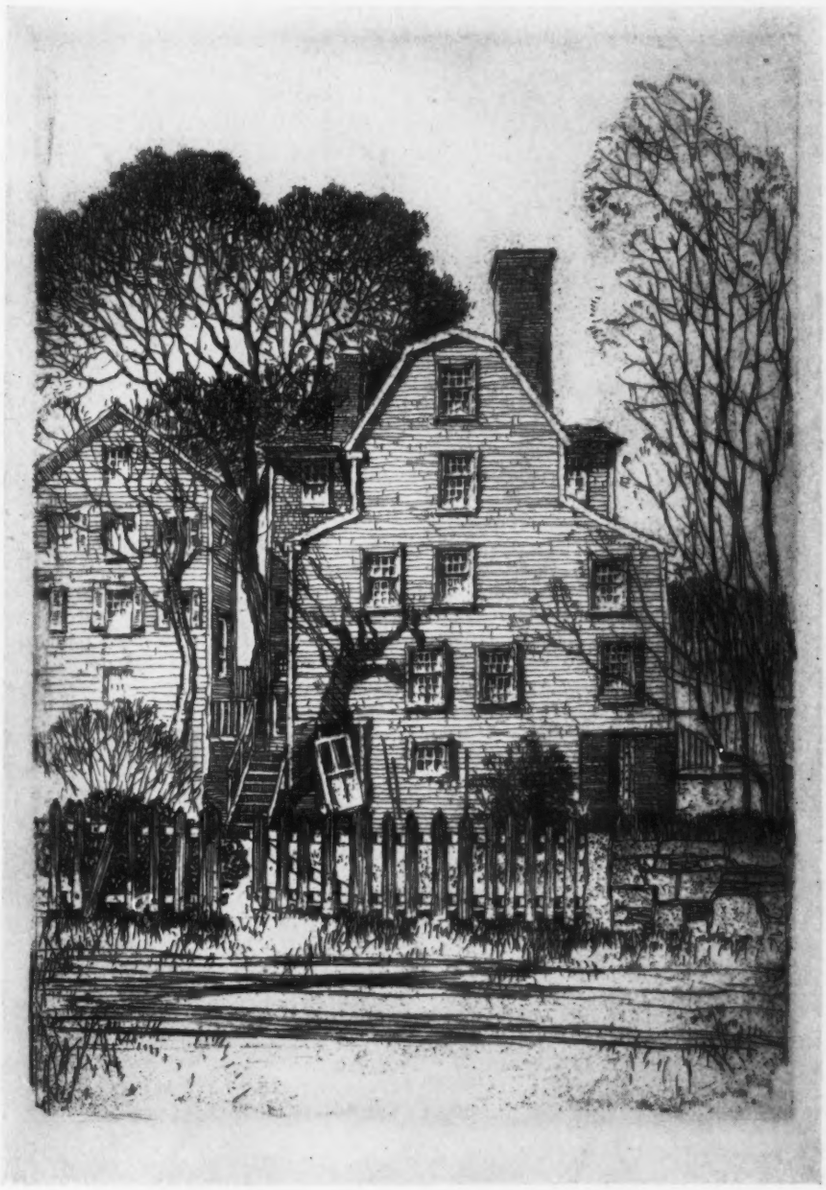
THE MONOGRAPH SERIES

Records of Early American Architecture

Edited by RUSSELL F. WHITEHEAD, A. I. A.

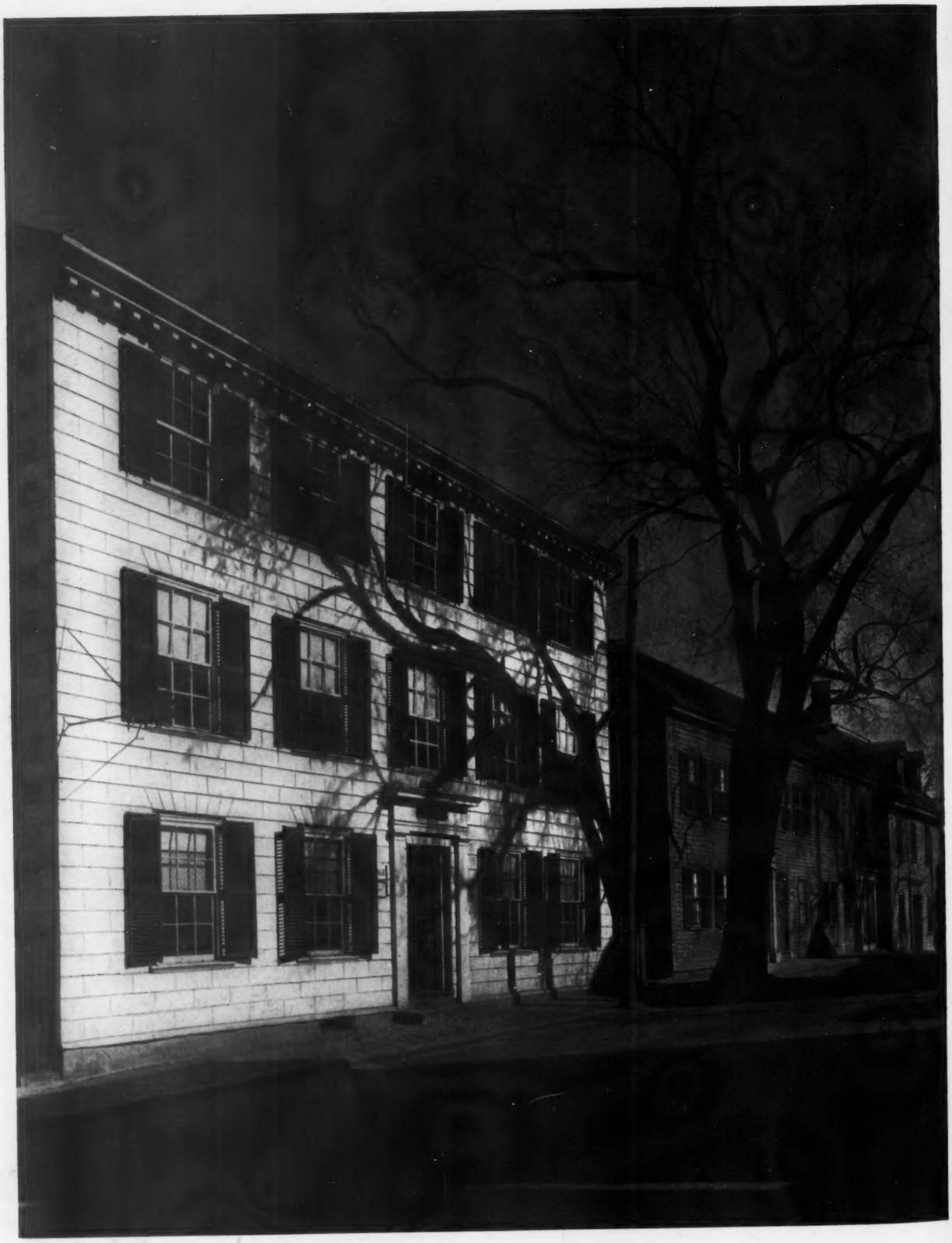
Measured Drawings by FRANK CHOUTEAU BROWN, A. I. A., *Associate Editor*
Photographs by ARTHUR C. HASKELL, *Architectural Photographer*

Volume XXIV • Number 2



HARBOUR ELEVATION OF OLDER PORTION
"KING" HOOPER MANSION, MARBLEHEAD, MASSACHUSETTS
ETCHING BY SAMUEL CHAMBERLAIN

[113]



VIEW ALONG HOOPER STREET, LOOKING WEST
THE "KING" HOOPER MANSION — 1745 — MARBLEHEAD, MASSACHUSETTS

[114]

OLD MARBLEHEAD

by FRANK CHOUTEAU BROWN, A. I. A.

THE ORIGINAL settlement of Salem* included within its area land now divided between Beverly, Peabody, Wenham, Manchester, Danvers, and Marblehead. It also covered Middleton, and parts of Topsfield and Essex. Marblehead itself was settled about 1629, although there exists a local tradition that its first resident was a man named Doliber, who came from the original group occupying Salem—then known as "Naumkeag"—previous to the arrival of Capt. John Endecott in June of 1628.

This legend extends into certain ramifying details that establish the site of his occupancy as one of the coves on or near Peach's Point,—and the form of his original residence as a fish hogshead!

Whether this be fact or fable, this convenient harbor was immediately appreciated by these early fisherfolk,—and by 1629, at least, it had begun to develop as a fishing village, at first called "Nanepashemet"—from the chief of the Naumkeag tribe of Indians who were found residing in the Salem area by the first English settlers. History—or, it still may be, legend—persists in claiming the original inhabitants who settled these rocky headlands, as fishermen from the islands of Guernsey and Jersey, in the British Channel, just off the coast of France.

The first "Meeting House" was located on the top of the steep, rocky elevation known as "Old Burying Hill"; still one of the highest sites in the town, with a number of protected coves lying near its base, and "Beacon Hill" just beyond. The picturesque little section of "Barnegat," with its pebbled beach crowded with fishing shacks, lobster pots, drying nets, and floats, and drawn-up dories nearby—still remains as a picture of the life that probably then—and for a hundred years and more thereafter—abounded in the little coves about the original church site, where the first Meeting House may have been built as early as 1638. From the "Burying Hill" you can still look down upon the placid landlocked waters of "Little Harbor"—with "Gerry's Island" only a few yards off shore,—reached over a sand bar at low tide—where the first minister of the town, Parson William Walton dwelt from 1638 to 1668.

On one of the headlands of "Peach's Point" adjoining, stood the "Mr. Craddock's House" of which Winthrop wrote in his Journal, in September of 1633, "Mr. Craddock's House at Marblehead was burned down at midnight before, there being in it Mr. Allerton and many fishermen whom he employed that season, who were all preserved by a special providence of God, with most of his goods there, by a tailor, who sat up that night at work in the house, and hearing a noise, looked out and saw the house on fire above the oven in the thatch." This was the Isaac Allerton of Plymouth Colony, who was probably in Marblehead as early as 1629,—and may have been carrying on his enterprises in partnership with Craddock, who was the first London governor of the Massachusetts Company and was actively engaged in the fishing business.

From Marblehead was launched the third vessel built in the Colony, called the "Desire," which returned from one of her early voyages to the West Indies, with the first cargo of slaves introduced into New England. Marblehead was named a "plantation" in 1635, and set apart from Salem in 1649; being incorporated by act of the General Court on May 2nd of that year.

The town originally grew up about the occasional fishermen's shacks, scattered irregularly upon the infrequent levels of the cliffs along the harbor, or clustered upon the few beaches to be found here and there at their base.

There could obviously not have been much order or regularity in such a Topsy-like growth as must have followed along this irregular shore. The first shacks were gradually replaced with small houses of two or three rooms, set any-which-way, wherever a small bit of level ground could be found, beside the paths that meandered up and down the rocky hillsides. Later, streets roughly paralleling the harbor line developed

*See the Monograph Series, Vol. XXIII, No. 2.

precariously; "Front," backed again by "Washington" Street; with only one fairly level and straight street connecting them; "State," leading from the "Town Landing" up to the old "Town Square."

As, gradually, the old paths climbing the bluffs were superseded, wherever it was possible (though many still remain!) by wider twisting but still tortuously narrow ways; the little houses were partly turned about, had new rooms and fronts added, or—as was the case with the "King" Hooper building—an entirely new portion was built in 1745 to face the street, against one end of the older gambrel house that still backs it. In the case of the Capt. Samuel Trevett house, this was crowded in on the north-eastern side of wandering Washington Street, well out upon the roadway, with its back against the higher rocky bluff, upon which a small doorway opens from the lower terrace of a crowding garden, from the upper levels of which one can almost see the harbor over the house!

It is not often a New England town is given three chances to retain its original identity, undisturbed—as usually it has to reproduce its integral parts upon the identical old site where first it took root. But Marblehead, dour in the stubbornness and content in the ignorance of its "98 per cent American ancestry," has thrown away no less than *three* opportunities to preserve its old picturesqueness! Its first settlement, about Fort Sewall and Little Harbor, had moved southwestward by 1700 to 1750 to a newer "Town Square" a full half mile; and this was, by a hundred and fifty years later, again abandoned for the still newer business center now at Washington and Atlantic Avenue,—but its too canny inhabitants, over three hundred years, have lacked entirely the business acumen and common-sense to conserve its greatest asset and charm, the individual and historic character of its old-time glamour,—that might have been kept for all time, with no interruption in its business development and modern growth,—which still continues, faster and ranker, to the south and west!

OLD "TOWN SQUARE," MARBLEHEAD, MASSACHUSETTS

PHOTOGRAPH TAKEN IN 1926 BEFORE THE REMOVAL OF WATERS HOUSE AND BAKERY (1683) AT THE LEFT

But, besides the old "Town Square," here shown, with its wooden Town House of 1727, as it appeared before the left hand group of buildings was demolished in 1937; it is still possible to find—here and there—an

ENTRANCE DETAIL
THE OLD TOWN HALL—1727—"TOWN SQUARE," MARBLEHEAD, MASSACHUSETTS

[117]

LEE STREET, LOOKING EAST
MARBLEHEAD, MASSACHUSETTS

old street or a cluster of buildings; a weathered Fish house or Fisherman's Cottage; old Boat Shop, or remaining Boat Yard. But they all are passing fast. With the construction of a new sewer, some five and six years ago, there vanished almost instantly a whole flock of privies, that had for generations perched here and there, higglety-pigglety, about the back and side yards of the town, at all heights and angles—wherever a promising declivity or rock fissure could be found! And with them vanished no small part of the old-town atmosphere,—though here and there about the harbor there remain evanescent flavors of the old fish flakes and dressing grounds to attract the gulls—and cats!—as well as the visiting firemen and rich westerners in search of historic cultural American backgrounds!

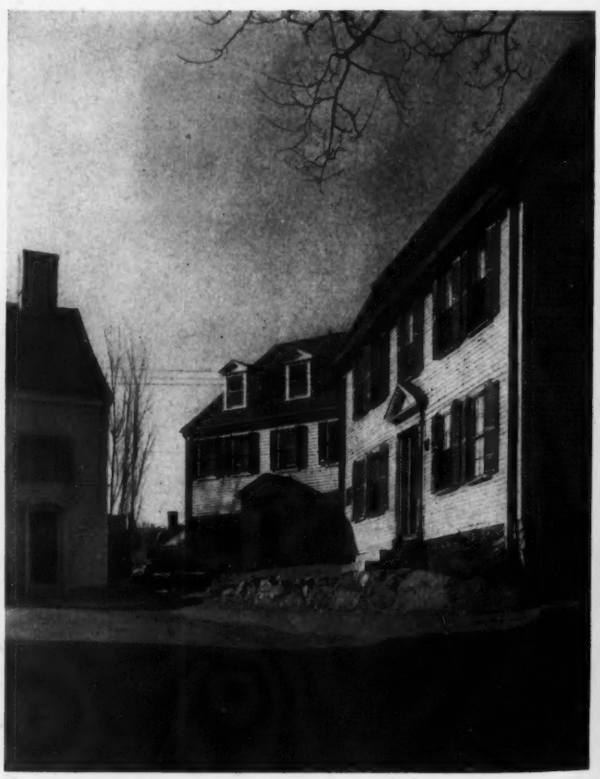
In many old house interiors, where the paneled fireplace ends show sloping ceilings to the side walls, there has been a belief that they were originally built in that manner to simulate the curving lines of ship-cabins. This may actually have been occasionally the case; but it nevertheless is the fact that this type of interior appearance is not confined exclusively to the coast, as rooms of this character are often found on sites located at considerable distances from the ocean. It is, further, undoubtedly the fact, that many of these effects are accidental, while the floors have subsided, the chimney and hearth have been kept up by their masonry support, so that the hearth slopes off from the underfire, along with the floor; or the underfire or hearth remains raised, often some inches above the floor level at sides and front, where floor slopes away from it, and down toward the two side walls.

In the Hooper house north west second floor front bedroom, this effect appears—but the difference in level can hardly be over one and a half to two inches, and the floor slopes as well from the hearth to both sides, and from the fireplace wall toward the front of the room. In the other chamber it is more marked, the difference being at least three to four inches, but again it appears on both the floor and ceiling of this room, though it is not apparent upon the floor above.

In the Trevett House, these differences are still more marked. In both upper front rooms, the slopes show in the ceiling, more in the room on the eastern than the western side of the hall—but in both cases there exists evidence of the floor having had a similar unevenness at least partially corrected—showing in the bases beside the hearth in the eastern room, and in a raised underfire and hearth in the room across the hall.

In the first floor west side room (page 126) there is a 14 inch soffit under the beam forming part of the

(Continued on page 127)



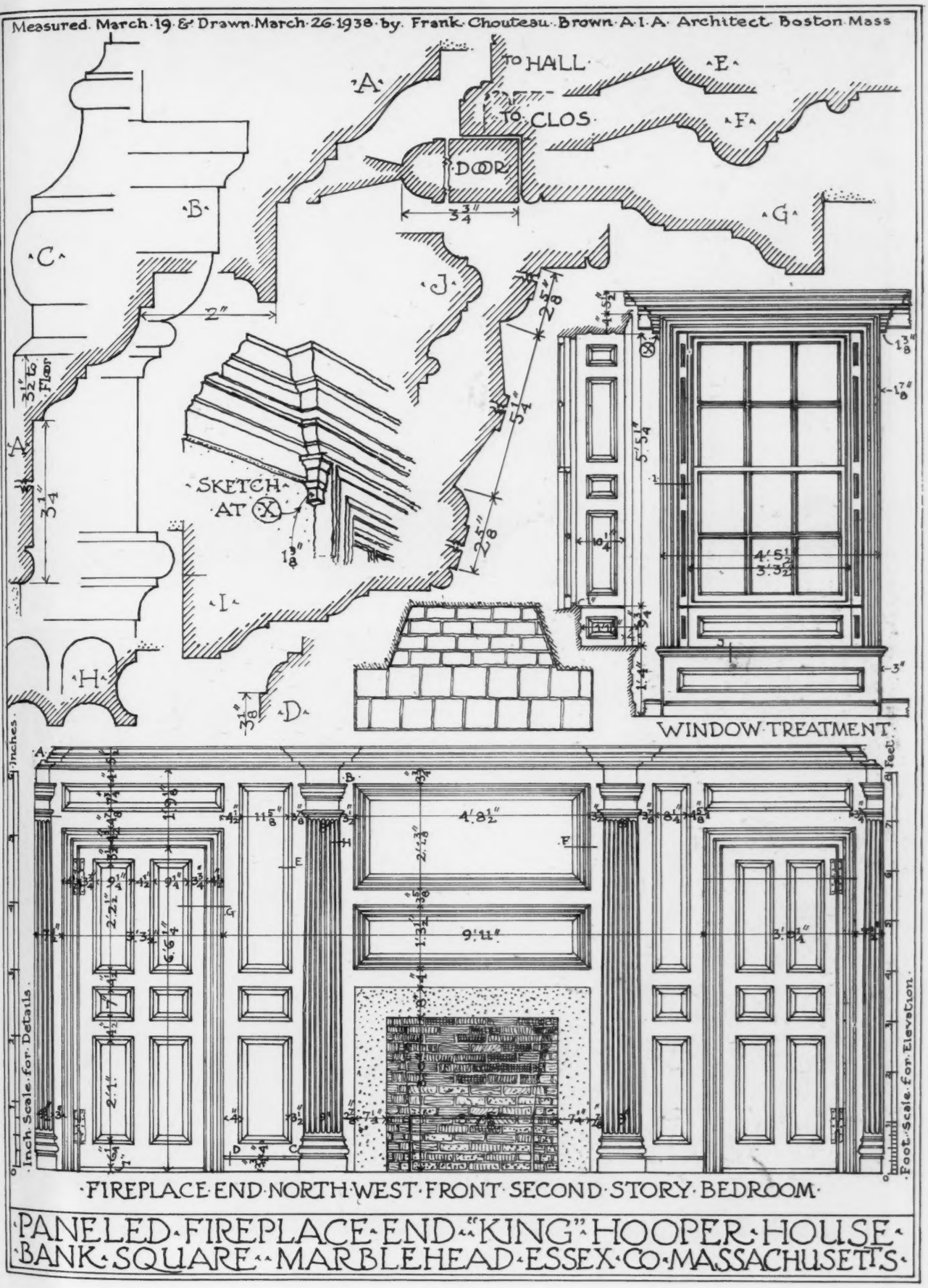
GLOVER COURT, LOOKING NORTH
MARBLEHEAD, MASSACHUSETTS

OLD HOUSES ON WASHINGTON STREET, LOOKING SOUTH-EAST FROM TRAINING FIELD,
MARBLEHEAD, MASSACHUSETTS

OLD HOUSES ON FRANKLIN STREET, LOOKING NORTH-EAST
MARBLEHEAD, MASSACHUSETTS

SOUTH ELEVATION—OLDER REAR PORTION
THE "KING" HOOPER MANSION, MARBLEHEAD, MASSACHUSETTS

[120]


Measured March 19 & Drawn March 26 1938 by Frank Chouteau Brown A.I.A. Architect Boston Mass
TO HALL
TO CLOS
DOOR
SKETCH AT (X)
WINDOW TREATMENT
FIREPLACE END NORTH WEST FRONT SECOND STORY BEDROOM
PANELED FIREPLACE END "KING" HOOPER HOUSE
BANK SQUARE MARBLEHEAD ESSEX CO MASSACHUSETTS

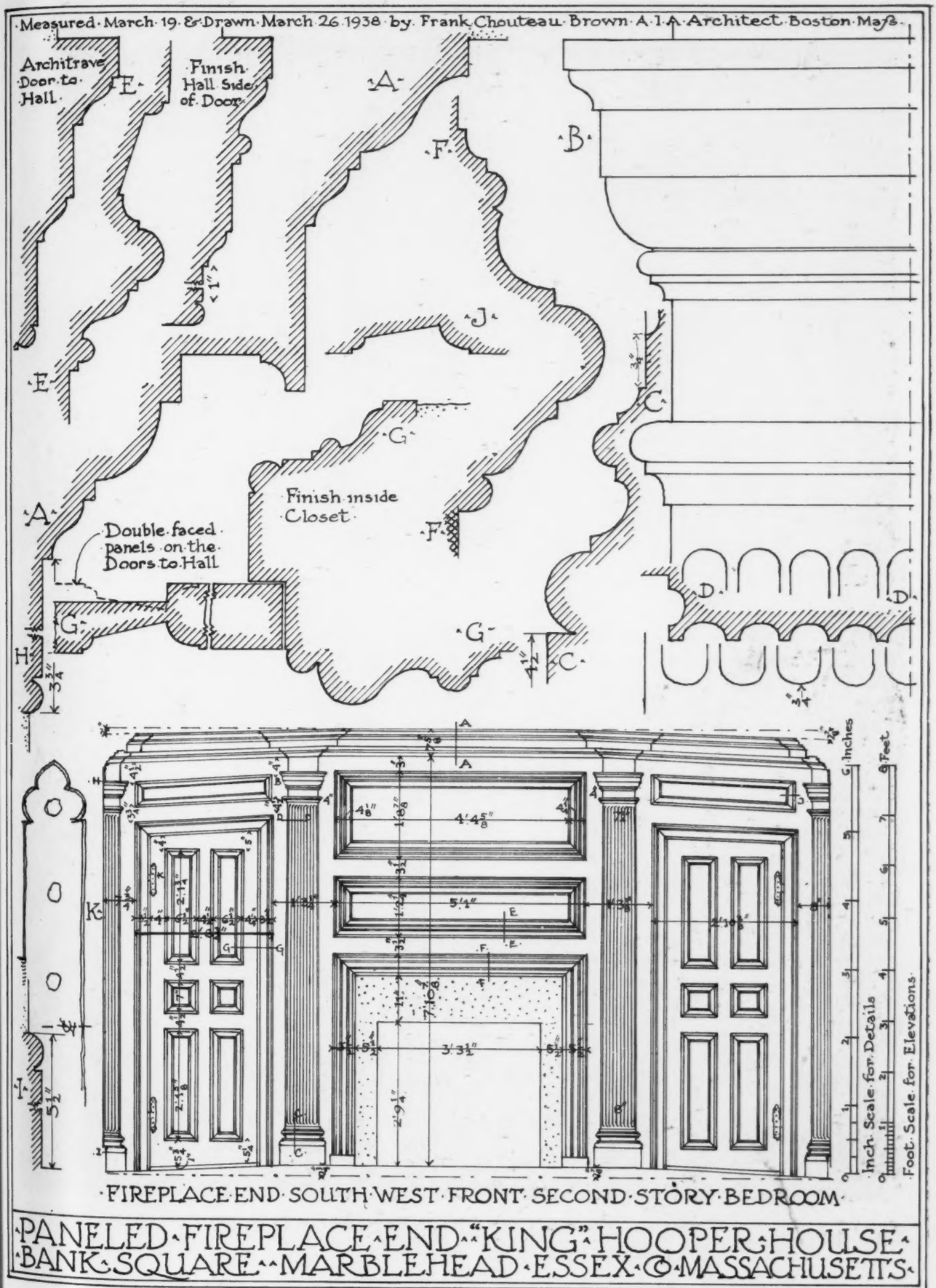
[121]

Fireplace End—North-West Second Story Front Bedroom

Fireplace End—South-West Second Story Front Bedroom

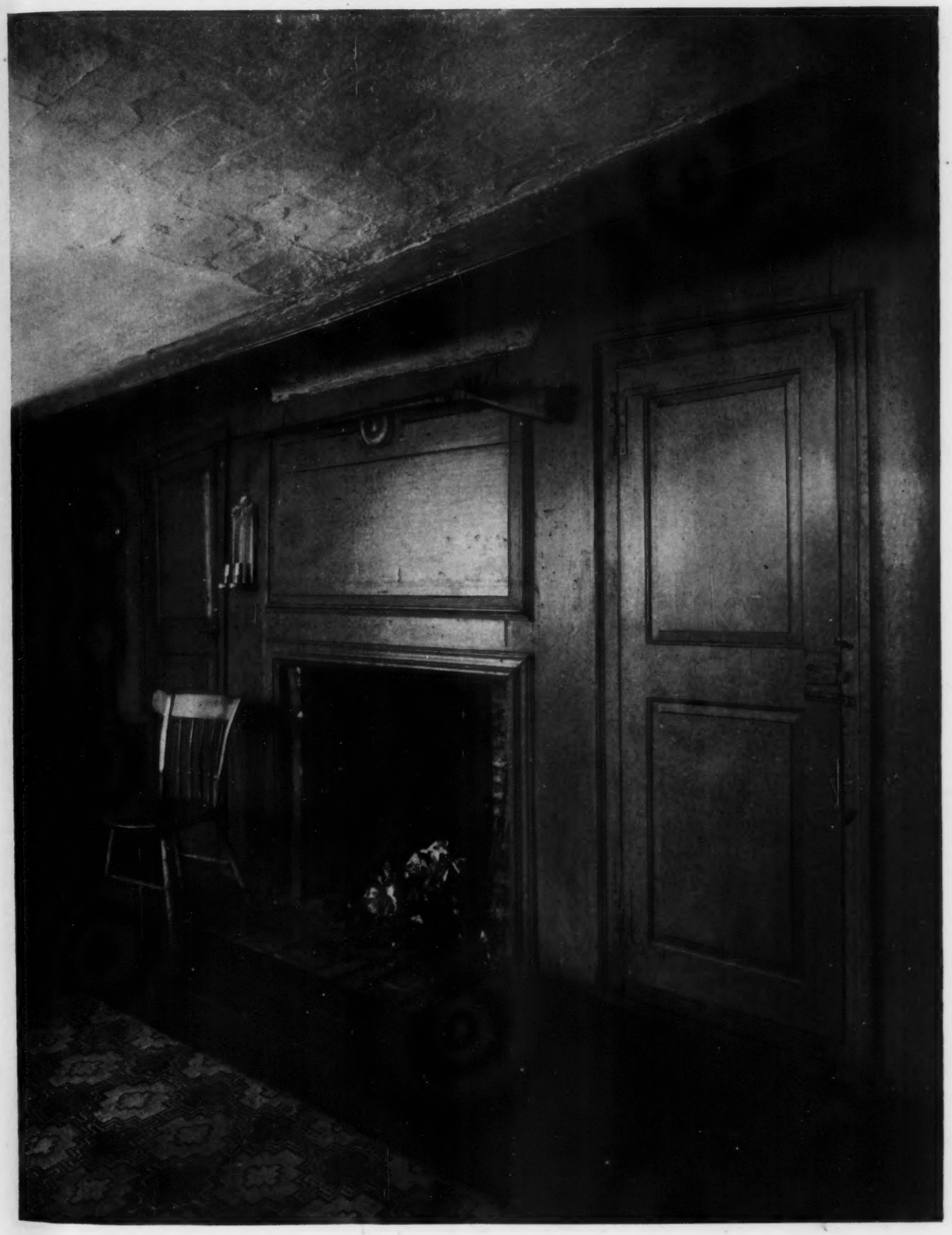
THE "KING" HOOPER MANSION—1745—MARBLEHEAD, MASSACHUSETTS

[122]


Measured March 19 & Drawn March 26 1938 by Frank Chouteau Brown A.I.A. Architect Boston Mass.
Architrave Door to Hall
Finish Hall Side of Door
Finish inside Closet
Double faced panels on the Doors to Hall
FIREPLACE END SOUTH WEST FRONT SECOND STORY BEDROOM
PANELED FIREPLACE END "KING" HOOPER HOUSE
BANK SQUARE MARBLEHEAD ESSEX CO. MASSACHUSETTS
6 Inches
9 Feet
Inch Scale for Details
Foot Scale for Elevations

VIEW OF HALL FROM FIRST FLOOR—NORTH-WEST FRONT ROOM
THE "KING" HOOPER MANSION—1745—MARBLEHEAD, MASSACHUSETTS

[124]



First Floor—Northeast Rear Room

THE CAPT. SAMUEL TREVETT HOUSE—BEFORE 1750—WASHINGTON STREET, MARBLEHEAD

[125]

First Floor—East Front Room

First Floor—West Front Room

THE CAPT. SAMUEL TREVETT HOUSE—BEFORE 1750—MARBLEHEAD, MASSACHUSETTS

[126]

cornice back to the face of the fireplace paneling, its soffit slopes upward at least two to two and a half inches, including the warped mouldings of the bed-moulding, while in the east room a still wider plaster soffit, from its front edge, warps up at the center to meet the higher fireplace paneling at this point.

ceilings seem to be brought at the front—or opposite —walls of the rooms, to a nearly level line,—which persists along the major part of the side walls, as well. In other words, so far as these two houses provide examples of so-called "Ship Rooms," in a distinctly seafaring community, there exists evidence to show that

WASHINGTON STREET ELEVATION

CAPT. SAMUEL TREVETT HOUSE—BEFORE 1750—MARBLEHEAD, MASSACHUSETTS

But in the room at the back (page 125) the beam crossing in front of the second floor hearth, while straight, exposes behind it, the under part of the arch of the second floor hearth, from each side of which the ceiling slopes sharply to the side walls, where it is lower by almost five inches! In all these rooms the plaster

these inequalities occurred through settlement or shrinkage of wood supports in contrast to the portion of the walls supported by the masonry of the chimney construction. Which does not disprove that there may still exist "Ship Rooms," intentionally so finished, far from the tang and roar of the ocean!

OLD HOUSES OFF THE ROAD TO FORT SEWALL, MARBLEHEAD, MASSACHUSETTS

[128]

PENCIL POINTS DATA SHEETS

Prepared by DON GRAF, B.S., M.Arch.

THE DISREGARD OF THE OBVIOUS

After the repeal of the 18th Amendment, master minds of the liquor industry hit upon a unique advertising idea. Unlike most businesses whose chief aim is to sell you as much of what they make as possible, the manufacturers of spiritus frumenti urged the customers not to imbibe to the point of becoming horrible examples. Now if the brewers, fermenters and distillers would indulge in a bit of introspection, they might carry this anti-horrible-example idea to the various forms of liquid courage that they decoct as well as the glass containers in which it is packaged.

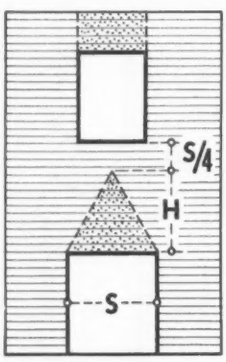
Take a gander at the illustration. Believe it or not, all

ANGLE LINTELS IN BRICKWORK

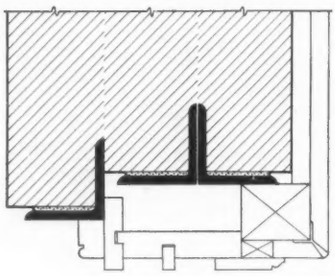
Index No. **B3a** STRUCTURAL

PENCIL POINTS DATA SHEETS PREPARED BY DON GRAF

SET 13 MAY 1938



DIAGRAM



SECTION THRU HEAD OF OPENING

CORBELING ACTION OF BRICK MASONRY. When brick masonry is laid on a lintel over an opening, the brickwork bond will have strength enuf to create a self-supporting corbeled arch. From the experience of wreckers and results of fire, many examples can be adduced to show that only a small triangular area of the wall over an opening is actually dependent upon the lintel for support. The size of this triangle is not susceptible to exact analysis for the stresses acting, and engineers variously assume the height of the triangle as 0.50, 0.67 or 0.865 times the span. Since headers or soldier courses do not bond to create corbeling effect, the height of the triangle should be taken from the top of such courses and not from the top of the opening.

WHEN CORBELING ACTION MAY BE ASSUMED. There must be a sufficient amount of brickwork over the triangle to permit the arch effect to act. One writer has given a minimum for this distance as ¼ of the opening span.

WHEN CORBELING ACTION MAY NOT BE ASSUMED. If the triangle over the opening does not have a sufficient amount of brickwork over it (as in the upper window in the illustration) then the lintel must carry the entire load within the dotted lines.

USE OF STEEL ANGLE ANGLE LINTELS. Calculations can be made on the assumption of a wall thickness of 4" — 2 of the selected lintels would be used for an 8" wall, 3 for a 12" wall as shown in the illustration, etc.

TABLE OF LINTEL SIZES. The following table assumes that the triangular space above the opening is equilateral, having a height of .865 times the span; the weight of brickwork, 120 lbs. per cu. ft.; there is sufficient brickwork above the triangle as to insure it acting as a corbeled arch to span the opening.

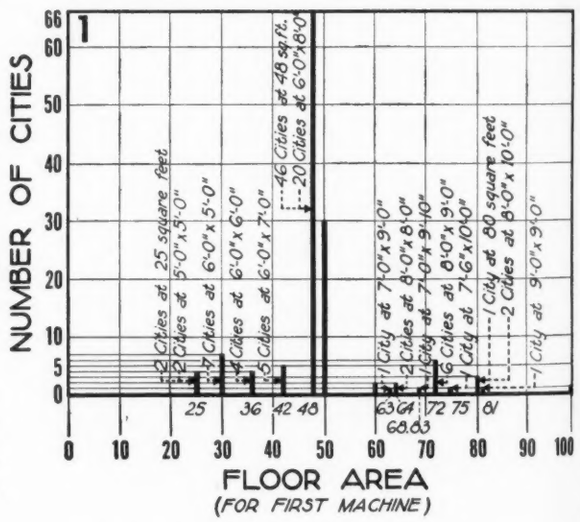
Span in Feet	*Total Triangular Load*	*Equivalent Uniformly Distributed Load*	*Angle to Use for Each 4" Thickness of Brickwork*
6'-0"	1247#	1660#	3½ x 3½ x 5/16
7'-0"	1630#	2170#	3½ x 4 x 5/16
8'-0"	2210#	2950#	3½ x 5 x 5/16

MOVIE PROJECTION ROOM AREAS

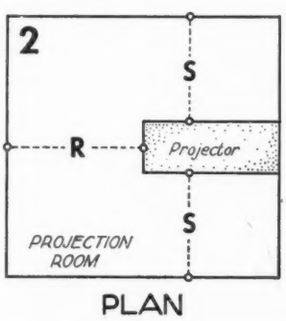
Index No. **D9b** PLANNING

PENCIL POINTS DATA SHEETS PREPARED BY DON GRAF

SET 13 MAY 1938



The standards proposed by the National Board of Fire Underwriters and the Travelers Insurance Company—a floor area of 48 square feet for the first machine and 24 square feet additional for each added machine—are generally enforced in the large group of cities conforming to the 48 square feet minimum for the first machine. The chart above shows the tabulation for 186 cities over 50,000 population which specify either square areas or width-by-length dimensions. A number of codes base the requirements on space around the projection machine, require sufficient space to permit operator free movement or make no provision, as shown below.



PLAN

Number of Cities.	R	S
1	4'-0"	3'-0"
14	3'-6"	3'-6"
2	2'-6"	3'-0"
8	2'-0"	2'-0"
14	Sufficient to permit operator free movement.	
13	No provision.	

3 of these bottles contain almost exactly the same number of fluid ounces. The one at the left represents the lowest possible level to which the logic of function can descend. It will fit into no known ice-box, cupboard or storage space; it takes 3 men and a horse to draw the cork, and after you get the cork out, a nice problem presents itself in getting it back into the bottle again. Apparently, the only solution is, once having opened it, to kill the whole bottle. And the little upside down cup which is blown into the bottom of the glass is supposed to fool you into thinking you are getting a full legal and unstinted United States quart.

The bottle in the center is at least honest with its clear glass and flat bottom, and the screw top can be opened without going to a machine shop.

But orchids to Mr. "Lloyd" for his square bottle which stacks compactly, and for the cork which is of the type known to old-time bartenders as a "working" cork.

THIS MONTH'S DATA SHEETS

After many years of searching, we have finally collected what promises to be the most complete collection of information on the design of motion picture theaters that has ever been published. The first sheet of a considerable number (D9b) appears below. More material will be printed in forthcoming issues—outlining every step with facts and figures—in conjunction with and complementary to, the series of articles appearing in PENCIL POINTS, the first of which will be found in this issue (which see). The *Data Sheet* B3a was suggested by George R. Britton of Mechanicsburg, Pa., and just in case you have forgotten, a triangular load creates the same bending moment as if it were 1⅓ times larger but uniformly distributed.

LIFE OF NON-FERROUS INSECT-SCREEN CLOTH

Index No. **F 3 i** CONSTRUCTION

PENCIL POINTS DATA SHEETS PREPARED BY DON GRAF

SET 13 MAY 1938

SCREEN MATERIAL	TIME OF FAILURE*	AT END OF NINE YEARS
98% Copper 2% Silicon	75/6 yrs.	Dark color; a number of small holes near the top.
Copper (Unalloyed)	71/2 yrs.	Dark color; considerable corrosion; wires thin with number of holes near the top.
90% Copper 10% Zinc	71/2 yrs.	Uniform dark color; holes at top and edge. Over half of cloth torn out by a slate in storm.
75% Copper 20% Nickel 5% Zinc	71/4 yrs.	Dark color; badly corroded, several holes.
80% Copper 20% Zinc	61/3 yrs.	Dark color; heavy corrosion products on some areas; other areas, the wires are thin, many holes; brittle.
95% Copper 5% Aluminum	57/12 yrs.	Entirely failed most of the cloth corroded away.
70% Nickel 30% Copper (Approx.)	42/3 yrs.	Dark color; badly corroded most of the cloth gone.

*Failure was deemed to have occurred when there was a break in the wire in at least 1 place, as a result of corrosion.

ATMOSPHERIC-EXPOSURE TESTS. Research Paper RP803 of the National Bureau of Standards records the results of atmospheric-exposure tests on 7 compositions of non-ferrous screen wire cloth, made by the National Bureau of Standards in cooperation with the A.S.T.M. over a period of about 9 years. The specimens were exposed at Pittsburgh, Pa., a heavy-industrial atmosphere; at Portsmouth, Va., and Cristobal, Canal Zone, a temperate and tropical sea-coast atmosphere, respectively, with some industrial contamination; and at Washington, D. C., a normal inland atmosphere. The bar chart above gives results of the tests at Pittsburgh.

MATERIALS. Seven non-ferrous materials in the form of 16-mesh insect-screen cloth woven from wire 0.0113" in diameter were used. Of the 7 compositions, unalloyed copper and the 90-copper 10-zinc alloy were commercially available at the time the program was started and have continued to be since. The other alloys were not on the market at the time.

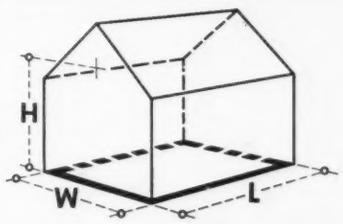
LABORATORY TESTS. Accelerated-corrosion tests were also made to determine the relative corrodibility of the different materials. The accelerated-corrosion tests consisted of salt spray and intermittent-immersion tests in salt solutions and dilute acid. The results were not consistent with the results of the exposure tests in any of the 4 locations and could not have been used to predict the behavior of the screen material in actual service.

CHART FOR FINDING CUBAGE

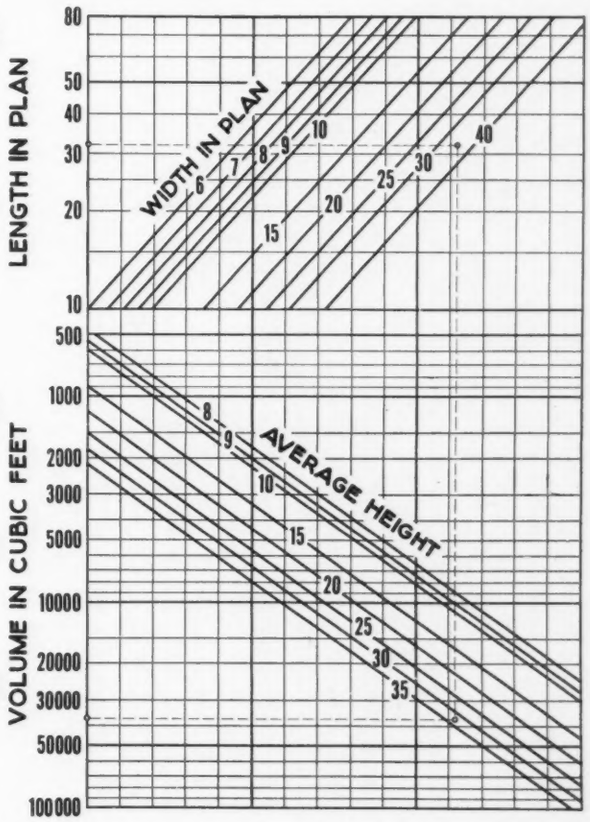
Index No. **G 8 e** DRAFTSMANSHIP

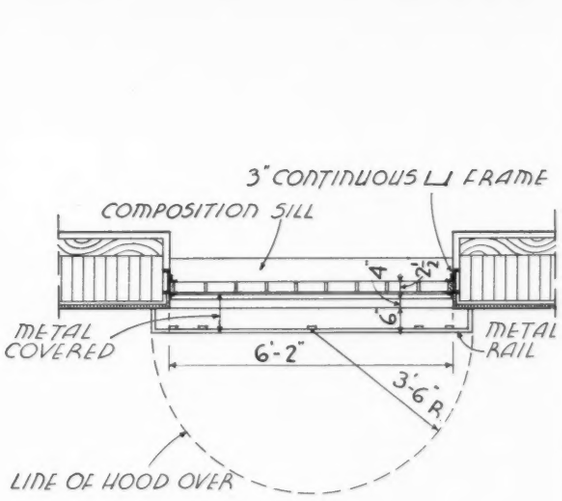
PENCIL POINTS DATA SHEETS PREPARED BY DON GRAF

SET 13 MAY 1938



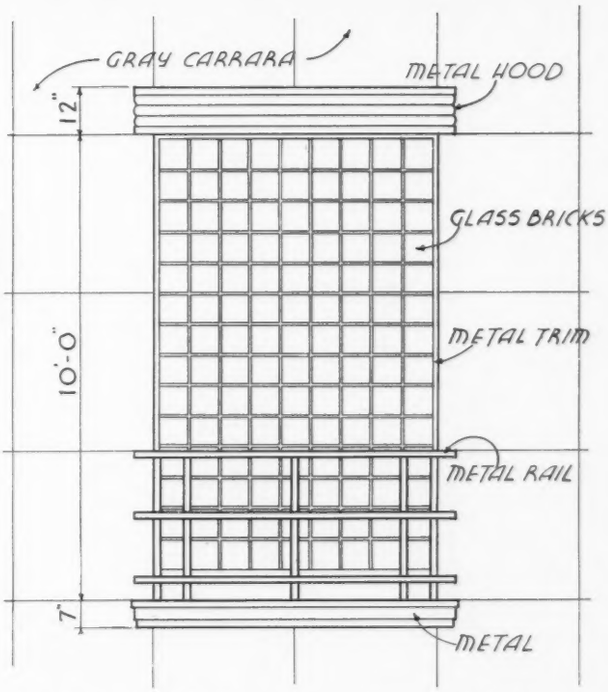
The approximate cubic contents of a solid can be quickly found with this chart. For example, for a house measuring 32′ x 35′ in plan by an average height of 33′, the volume scale shows the cubic contents to be approximately 37,000 cubic feet.





PLAN OF BALCONY

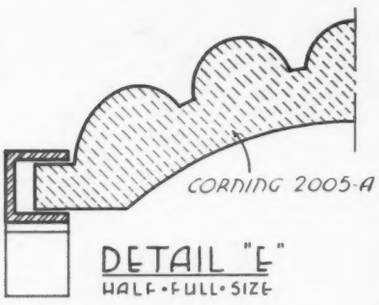
SCALE: ¼" = 1'-0"



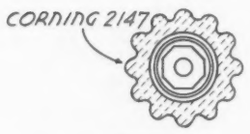
ELEVATION

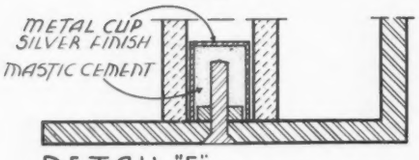
SCALE: ¼" = 1'-0"

DETAIL OF PITTSBURGH PLATE GLASS CO. ALL-GLASS WAREHOUSE, MIAMI—E. L. ROBERTSON, ARCHITECT



DETAIL "E"
HALF • FULL • SIZE





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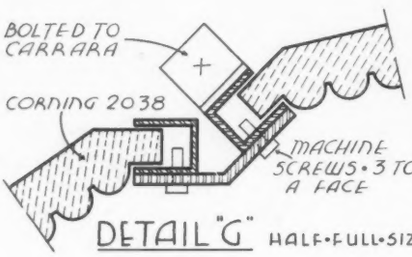

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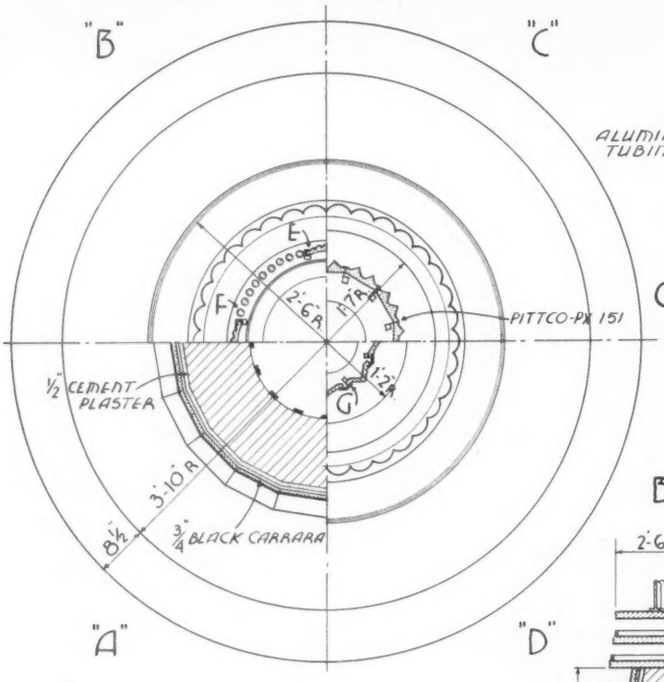
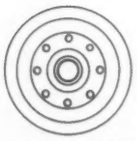
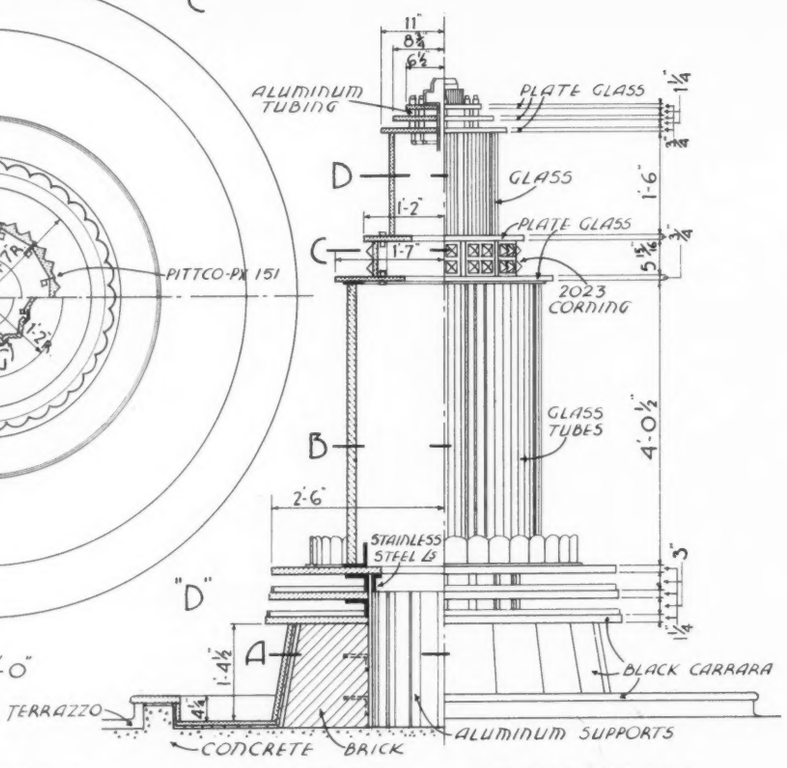


PLAN SCALE: $\frac{3}{8}$" = 1'-0"

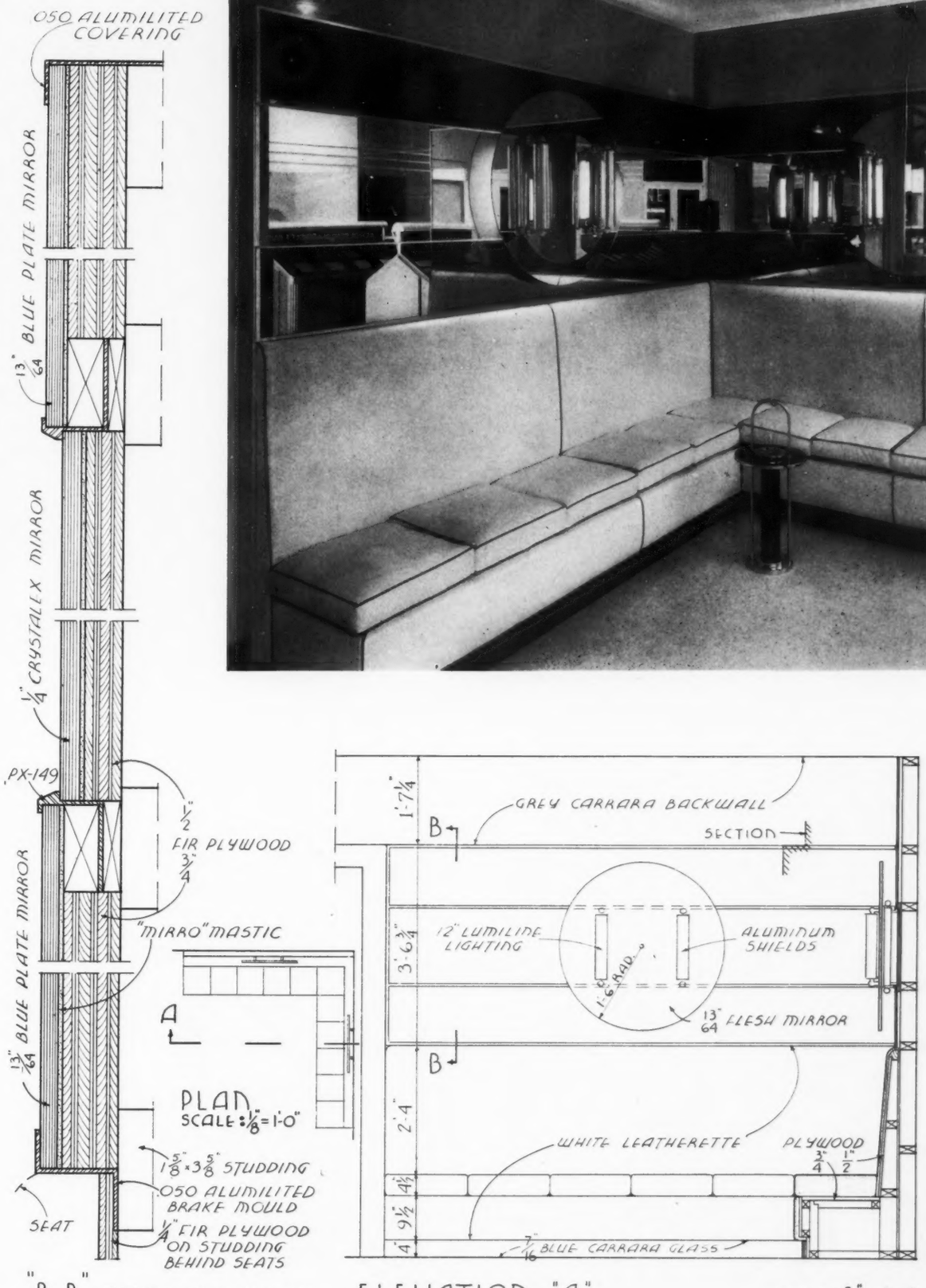


PLAN OF TOP

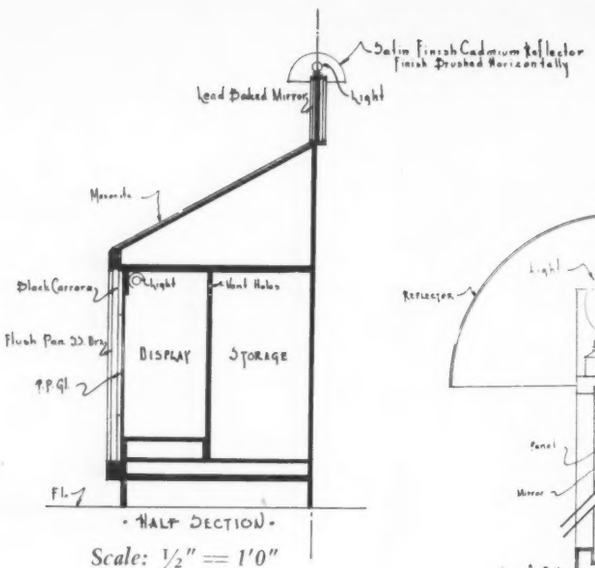


SECTION ELEVATION
SCALE: $\frac{3}{8}$" = 1'-0"

CONSTRUCTION DETAILS, GLASS FOUNTAIN, PITTSBURGH PLATE GLASS COMPANY'S MIAMI WAREHOUSE



DETAIL OF LOUNGE CORNER IN PITTSBURGH PLATE GLASS COMPANY'S MIAMI, FLORIDA, WAREHOUSE



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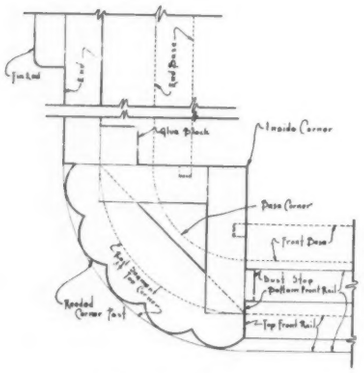

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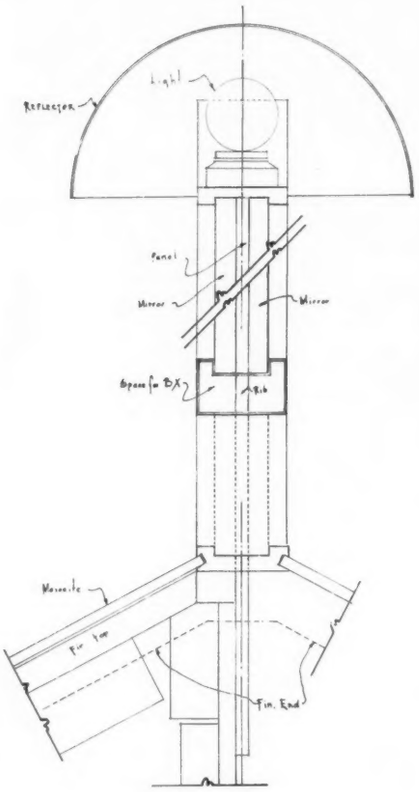

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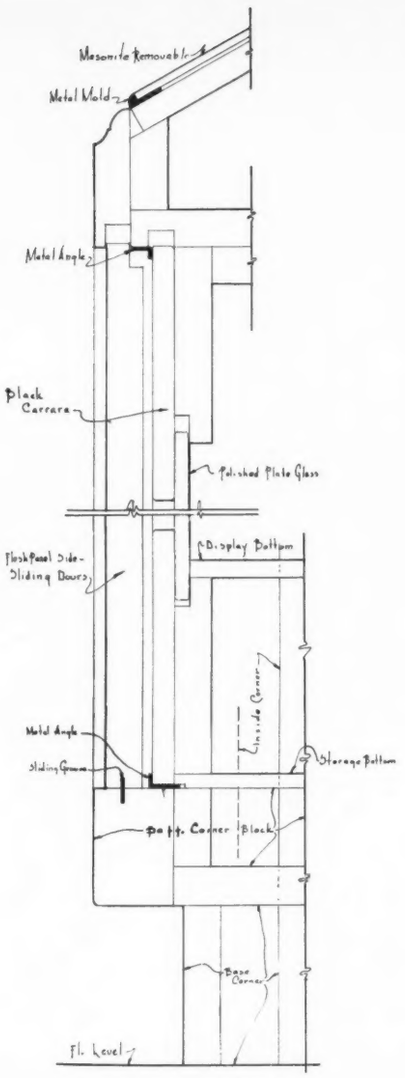

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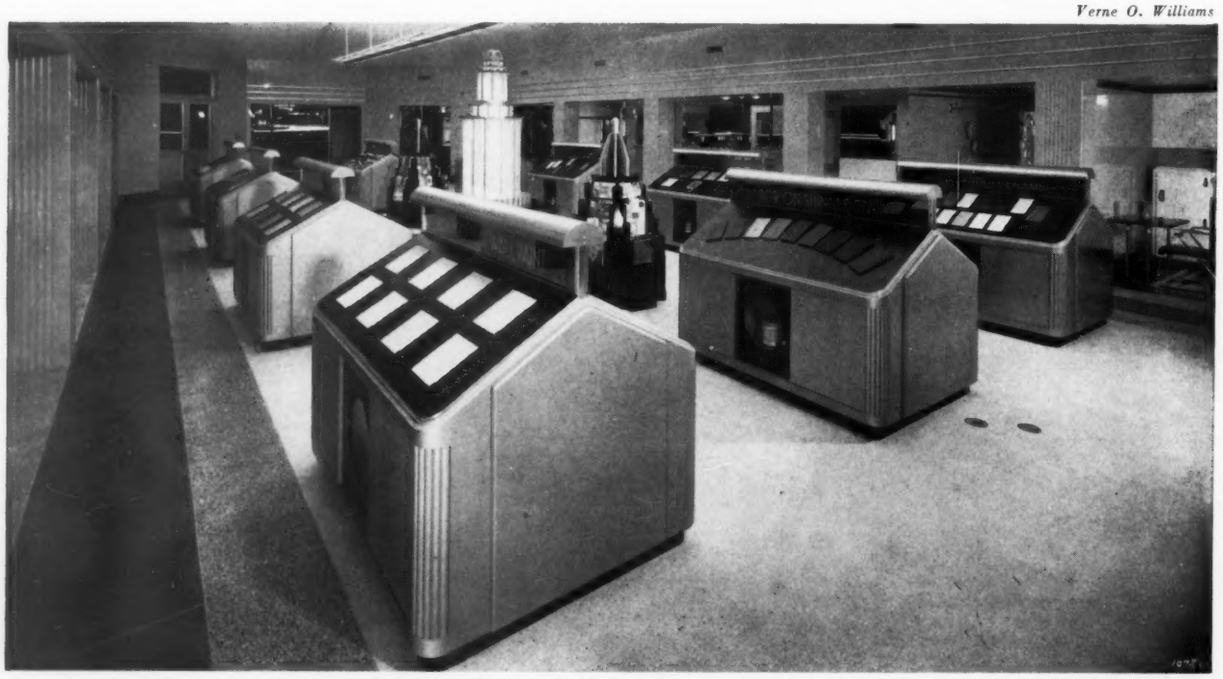
Verne O. Williams



DETAILS OF DISPLAY CASES DESIGNED BY M. K. TEACH FOR PITTSBURGH PLATE GLASS CO. MIAMI SHOWROOM

THE DESIGN OF THE CINEMA

1. REQUIREMENTS FOR THE PROJECTION ROOM

BY DON GRAF

EDITOR'S NOTE: *This is the first of three articles to appear in* PENCIL POINTS *on the design of motion-picture theaters. The second will appear in the June issue and will be based on a paper read at the annual convention of the Society of Motion Picture Engineers, April 27th. The Society has recently completed a nationwide survey of actual theater conditions and this material will present, for the very first time, many facts that the architect has hitherto been forced to guess at. This paper represents a notable effort and a unique forward step in rationalizing the design of the "cinema." The* Data Sheets *will complement the articles on theater design with a typical data-ized treatment, giving the salient information in telegraphic form for quick reference.*

IN the design of a movie theater, the architect is confronted by considerable confusion as to the jurisdiction of various authorities who have appeared in print with requirements based on safety, adequacy, convenience or whim. Those who have established themselves as arbiters of proper design are as numerous as the pseudo Walter Camps that perennially name All-American football teams. These various agencies may rely for enforcement of their dicta on police power, financial pressure or an appeal to sound function. The architect of an inquiring mind will discover that most of the recommendations are entirely inadequate for the convenience of theater patrons and the efficiency of the operating personnel. In very few cases are the established requirements any more than a guide to minimums which should be generously amplified and enlarged if possible.

In the design of projection-booths for moving-picture theaters, we have the following organizations which have gone on record with opinions as to requirements. These are listed approximately in the order of their ability to enforce their rules.

First, the local city Building Code. The provisions of this code are enforceable by the police power of the municipality and must, consequently, be observed. Moreover, adherence to the local code provisions are often checked with great thoroughness by the various building inspectors. Violations, whether deliberate or unintentional, are almost certain of discovery. In many small cities there may be no general building inspector, these duties being assumed by the electrical inspector so that oftentimes mandatory design requirements are found in the local codes under the electrical work! In addition to the local building code there may be municipal ordinances, fire prevention regulations and police codes which affect the architectural work. In the absence of local regulations, the requirements of one of the following agencies will govern.

Second, State Building Laws. In general it may be said that where state legislation exists, the safety requirements are usually higher than where there are city regulations only. Although theoretically enforced by police power, state codes may lack the machinery of inspection and enforcement that obtains with local regulations.

Third, the National Board of Fire Underwriters. The recommendations of this board do not have legal status. They are enforceable only through the pressure of higher insurance premiums where they are disregarded. In many cities it will be found that the provisions of the N.B.F.U. Code are in agreement with the legal regulations.

Fourth, Travelers Insurance Company. Regulations formulated by this company have no legal standing and enforcement is dependent upon the pressure of higher premiums for insurance against occupational incapacity. Conflicts with requirements of the first three groups are trivial and in many cases T. I. C. recommendations are less stringent.

Fifth, Uniform Building Code. A number of cities, principally in California, have adopted local city regulations which are identical, known as the "Uniform Building Code." The provisions have no legal force in any other locality but the provisions are often cited as a basis for design in the absence of other guides.

Sixth, National Electric Code. This code in itself is not legally enforceable except where it has been made a part of the building code. A number of provisions have been incorporated which have nothing to do with electrical adequacy or safety.

The handling of motion-picture film involves serious hazards from explosives and fumes. The safety of the operators and of the audience requires that the projection-room be made as accident-proof as possible. Motion-picture film is highly inflammable and subject to deterioration unless atmospheric conditions are controlled. It requires careful handling. In addition to the fire hazard resulting from the showing and handling of the film, employees

engaged in projection-rooms risk occupational disability through exposure to ultra-violet and infra-red rays and to fumes given off when the film is exposed to the heat from arc lights.

The Bureau of Labor Statistics, U. S. Department of Labor, has issued a pamphlet (Serial No. R647) entitled "Safety Standards for Motion Picture Machine Operators." It presents a survey of the requirements of 186 cities of 50,000 population and over, together with the recommendations of the Uniform Building Code, the National Board of Fire Underwriters, the Travelers Insurance Company and the National Electric Code.

The following discussion of architectural requirements established for the construction of projection-rooms shows the extent to which cities, States, and other agencies have attempted to establish standards. The table below summarizes, in part, the results of the survey of the Bureau of Labor Statistics.

Item	*NBFU*	*UBC*	*Most Cities*
Floor area for first machine	48 sq. ft.	50 sq. ft.	48 sq. ft.
For each additional machine	24 sq. ft.	.....	24 sq. ft.
Height of room	7′-0″	7′-0″	7′-0″
Door to room	2′ x 5′	.....	2′ x 6′
Lookout ports, maximum	10″ x 20″	150 sq. in.	12″ x 12″
Projection ports, maximum area	.....	120 sq. in.	120 sq. in.
Projection ports, maximum dimensions	.....	.....	6″ x 12″
Ventilation inlets	.....	90 sq. in.	no provision
Number of walls with inlets	.....	3	3
Vent to outer air	.....	10″ dia.	10″ dia.
Required air changes	.....	6 per hr.	no provision
Rewinding in projection room	.....	.....	permitted
Rewinding during operation	.....	.....	no provision
Metal cases for film storage	.....	required	required
Container for hot waste carbon	required	.....	required

We now take up in detail the various features which demand particular architectural attention.

Projection-Room Area

Minimum requirements regarding floor area of projection-rooms are established by public regulations—either State or municipal, in the majority of cities of over 50,000 population. An analysis of the requirements shows them to be most woefully inadequate and apparently based on conditions obtaining many years ago when movie legislation—not to mention the projection equipment—was in its infancy. The following résumé for 186 cities will reveal ridiculous inadequacy.

Item	*Minimum*	*Majority*	*Maximum*
Floor area for first machine	25 sq. ft.	48 sq. ft.	100 sq. ft.
Dimensions of floor for first machine	5′ x 5′	6′ x 8′	8′ x 10′
Clear space around first machine	2 ft. sides 2 ft. rear	3½ ft. sides 3½ ft. rear	3 ft. sides 4 ft. rear

It will be noted that the requirements of different cities are classified in the table in three different ways—square feet of floor area, actual dimensions, or clear space around the machine. In the first two cases the figures given by the majority of cities would be either impossible or inadequate to properly provide for working space in which to operate a modern projection machine.

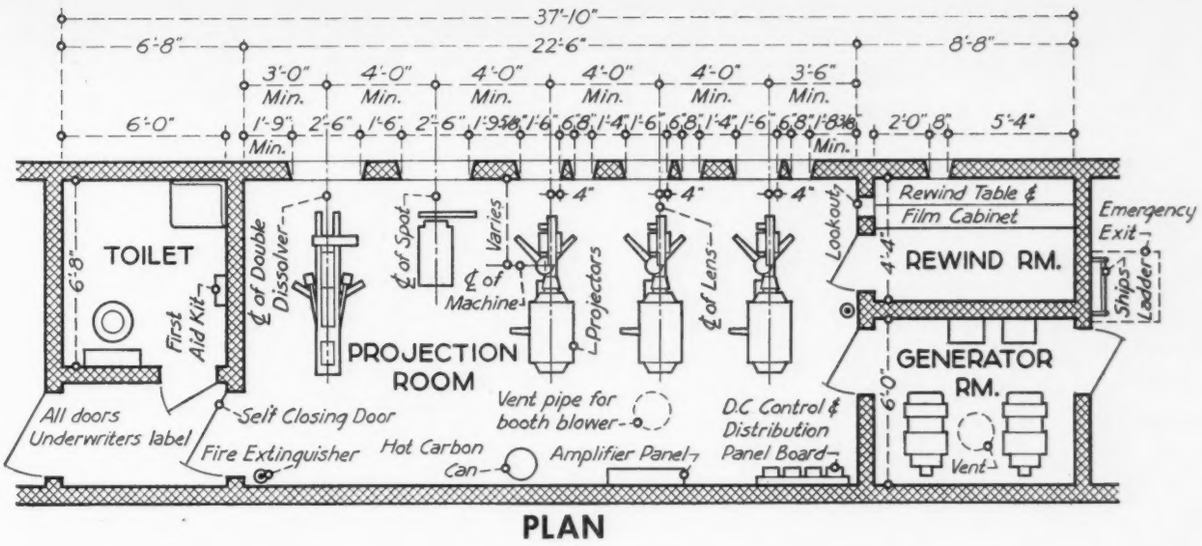
Examination of one of the latest sound-on-film projectors reveals that its over-all dimensions are roughly 30 inches wide and 6 feet long. If we may assume that a projection machine needs a space of 7′-6″ wide, the 48-square-foot rule would allow us 4/10ths of a foot behind the machine in which to pass by and get at its working parts! On the other hand, if we consider that 3 feet is needed behind the machine (and this is little enough), the 30-inch wide machine would have to be placed in a space about 5′-4″ wide.

Since every one else is in the business of making recommendations, why shouldn't we? Recognizing the fact that a movie projector is not placed with its lens touching the front wall of the booth, it will be found that a reasonable dimension for the booth from front to back would be 11 feet or more, and a minimum width of space for the first machine might be well taken at 7′-6″ to 9′-0″.

The standard of 24 square feet for each additional machine is generally enforced in the large group of cities conforming to the 48-square-foot minimum for the first machine. Machines must be placed at least 4 feet on centers which would give us a room 6 feet deep—in other words, 1 foot too short for a 6-foot modern projector with the lens 1 foot from the projection port in the wall!

Height of Ceiling

Whereas the floor area specifications proceed from nothing more serious than failure to keep up with developments in projection equipment, the ceiling height standards either show downright inhumanity or date from the age of chivalry when the knights of old are said to have averaged 5′-4″ in height. A projectionist working in the projection-rooms built according to the building codes in some cities would do well to equip himself with a complete set of armorial gear and a built-in gas



PLAN

The above plan makes provisions far in excess of the usual legal requirements, which are in some cases merely impractical and in other cases impossible. Although some laws allow rewinding in the projection-room, it is desirable to allot a separate space for handling the highly inflammable film. Toilet facilities are mandatory in a minority of cases but desirable for the comfort of persons who work at a difficult, hazardous, confining vocation

mask besides. We have already noted the danger of the fumes which escape from a carbon arc lamp—knowledge that should be current among the agencies who form codes for theaters. These officials, however, have probably not discovered the fact that ventilation of a room is facilitated by adequate ceiling height. It is almost unbelievable to discover in this enlightened day and age, that a city of over 50,000 people allows human beings to work in a hot, fume-filled room that is 5′-6″ in height!

In the monthly Labor Review pamphlet a new all-time high in understatement has been achieved when they say, "In the 17 cities where the lower limit (of ceiling height) is 6′-0″ and less, *some inconvenience* must necessarily be experienced by men of greater than average height." *Some inconvenience* might also be experienced in putting a modern projector (which is about 6′-0″ high) in a room with a ceiling of 6′-0″ or less!

Certainly no architect with any feeling for his fellowmen or any respect for the functional side of architecture would be satisfied with a ceiling of less than 8′-0″.

Projection-Room Ports

Regulation of the kind and size of openings in projection-rooms is intended to secure convenience and safety to the operators and a measure of protection to the public. The ports have two purposes—one is for the light beam from the projector or other machine and the second is to observe the image on the screen or the objective of the spotlight.

The architect will best handle the question of all ports in the projection-room by finding out at the earliest possible moment what company is to furnish the projection apparatus. Such a company will cooperate with him in the proper placing of the openings and will have a full knowledge of the building regulations which apply in his locality. The heights of projection ports is a matter which depends upon both the type of projector and the angle of projection and is nothing for an architect to fool around with by himself.

Sanitary Facilities

Of the 186 cities covered in the survey of the Bureau of Labor Statistics, almost one-third require sanitary facilities in connection with the projection-room. Whether or not the law requires it, the architect will be disposed to incorporate vitreous china symbols of civilization whenever possible.

Doors

Standards proposed by interested bodies vary widely as regards door size. Automatic-closing doors opening toward the principal means of exit of the Underwriters Label type should be used, even in the few cities which do not make it mandatory. Only a limited number of localities require a second means of egress from the projection-room but here again a common regard for the danger involved will dictate some auxiliary egress even though not legally demanded.

Ventilation

The general lack of requirements for proper ventilation is fully as startling as the lack of consistency in those requirements which have been established. Complete lamp-house ventilation, projection-room exhaust capacity which will change the air not less than 6 times per hour, the venting of the generator room by mechanical means—all should be considered as practical minimum conditions whether or not they are legally mandatory. Satisfactory ventilation of the projection-room itself presupposes the placing of fresh air inlets near the floor on at least 3 sides of the projection-room.

Rewind Room

It is an open question whether or not it is safe and reasonable for rewinding of film to be carried on during the showing of other film by an operator. On the theory that it is wise to play safe, a separate room should be provided for rewinding, especially if there is any likelihood of continuous shows without any intermission. The rewind room should be furnished with an observation port or lookout so that when a single operator is on duty he can rewind and observe the projection machines and the picture image on the screen from his position at the rewind table.

It is significant that State governments, after once framing regulations with considerable care, have tended to make no striking alterations as conditions have changed, *with the exception* that frequently the only provision modified has been that of establishing a license fee for theaters! In common with State laws, municipal ordinances for theaters have remained substantially in their original form. A serious need exists for extension of the laws and regulations governing conditions in motion-picture projection-rooms, to secure public standards where none exist, to raise those which are low and to insure uniformity.

Reference: *Monthly Labor Review*, January, 1938, of the Bureau of Labor Statistics, U. S. Department of Labor, Publication Serial No. R647. Acknowledgment is hereby made to John L. Sefing of the National Theater Supply Company, for assistance rendered in the preparation of this article; to the Society of Motion Picture Engineers; and to the Radio City Music Hall for the photograph of the projection-room.

The spacious, airy room from which films are shown at the Radio City Music Hall is far different from the cramped, telephone-booth-size projection rooms of earlier movie theaters. Note the ample ceiling height to insure good ventilation, and the width of room to provide adequate working space behind the projectors. The beam of light, carrying the image of the film, must travel 191 feet to project a picture 23 feet high and 30 feet wide on the screen. The Music Hall screen is the largest ever used in an indoor theater, measuring 40 by 70 feet